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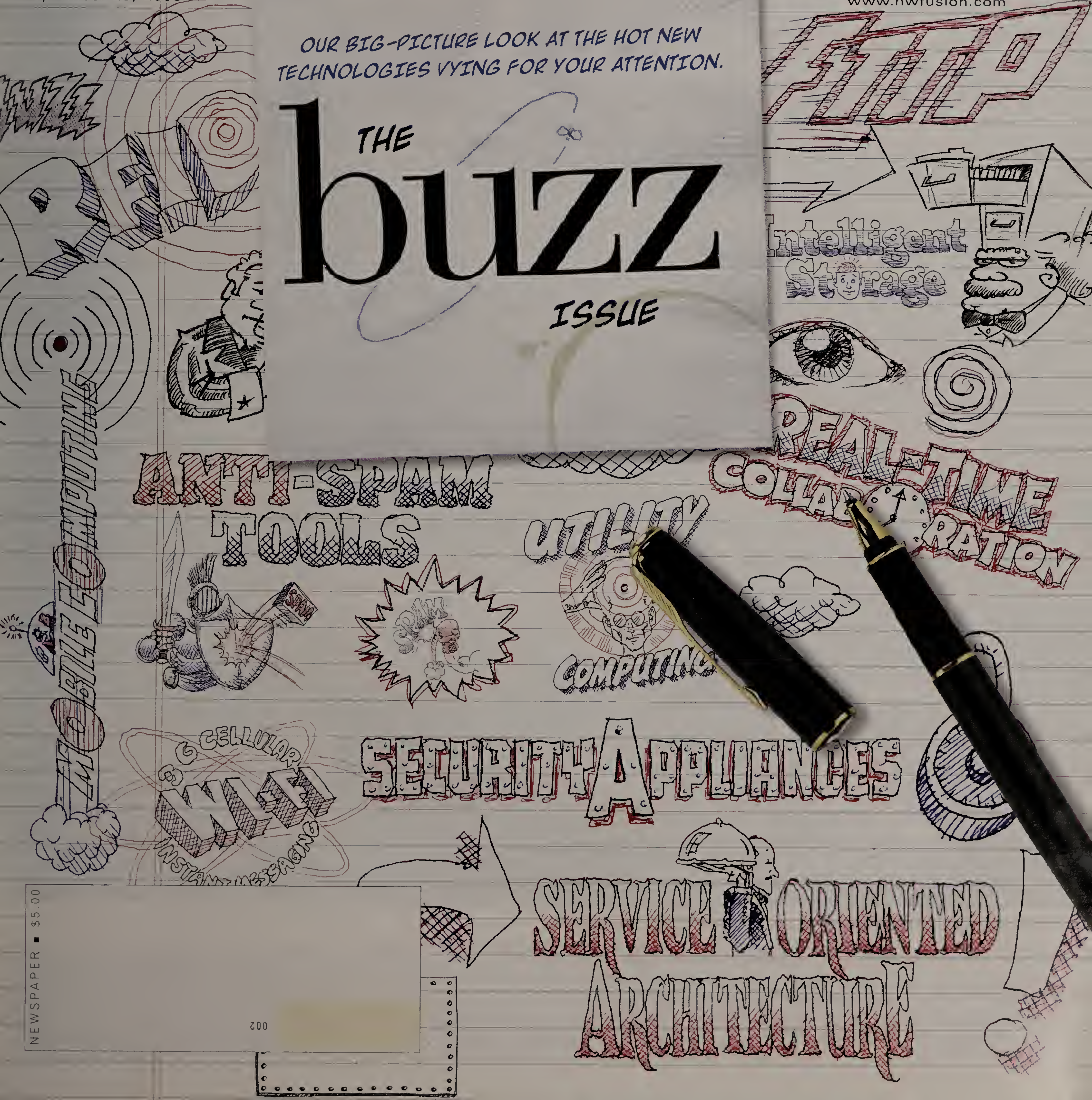
THE buzz ISSUE



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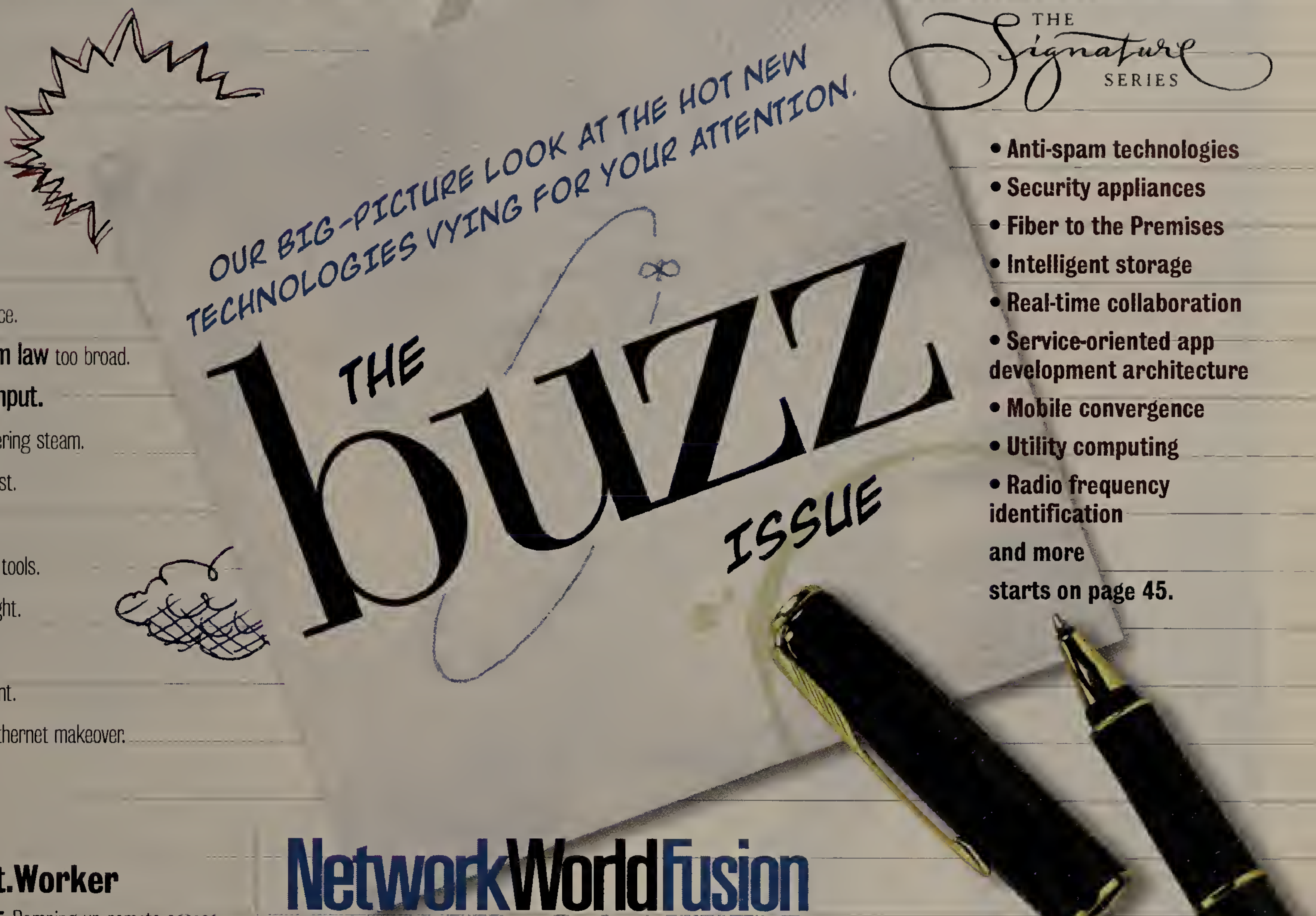
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Columnists

Compendium

Ego-Googling

So by now you've lost track of how many people you've Googled. But how many people have Googled you? Fusion Executive Editor Adam Gaffin shows you a way to find out. **DocFinder: 7841**

Wireless Wizards

How does Power over Ethernet work?

The Wizards explain how POE works to power up an access point. **DocFinder: 7842**

Telework Beat

At last, home servers

Net.Worker Managing Editor Toni Kistner says products from Ispiri, D-Link and Seagate provide much-needed consumer storage options. **DocFinder: 7843**

Small Business Tech

ERP for SMBs

Columnist James Gaskin says if you've outgrown your accounting software, look to iCode. **DocFinder: 7844**

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News

EMC readying flexible storage arrays

■ BY DENI CONNOR

EMC is expected to bolster its mid-range arrays this week with three new network-attached storage systems that sources say not only will give users more flexible and scalable configuration options, but also let them re-use existing arrays.

While EMC declined to comment, the announcement is expected to include:

- The NetWin 200, a NAS server that combines Microsoft's Windows Storage Server 2003 technology with EMC Clariion CX200 storage.
- A gateway product, the NS 600G, that lets users connect Fibre Channel Clariion arrays to Gigabit Ethernet networks.
- A new, less-powerful and less-expensive Celerra NAS system.

Kent Smith, principal consultant for IPSO, a business systems integrator that installs and configures EMC boxes, says the new arrays allow considerably more flexibility.

"Every customer I am working with is continually trying to figure out how to take what they've got and continue to use it while still bolting on new functionality," Smith says. "I have one client that doesn't have NAS, but does have a few Symmetrix boxes that are all connected directly [to servers]. With these new products, they can take their Symmetrix boxes, add disks and connect them to the network with an [NS600G]. They can do it without buying a lot of other stuff and improve the value of the existing equipment."

The NetWin 200 will mark EMC's entry into the low-end Windows Storage Server 2003 market. The NetWin 200, which is based on EMC's CX200 disk processor enclosure and a dual Intel Pentium 4 processor-based server attached to as many as 30 146G-byte disks, is aimed at customers who will implement it in a core-to-edge NAS/storage-area network configuration.

In this configuration, customers will install smaller Windows Storage Server appliances at the edge of the network that feed into the NetWin 200. In turn, NetWins will connect to Celerra NS600 arrays and then into Celerra Clustered Network Server boxes, which are connected to EMC Symmetrix storage arrays in the data center.

In addition to having as much as 4 terabytes of usable capacity, the NetWin 200 will have redundant cooling fans and data paths, and RAID 5 support, as well as EMC's PowerPath option, which switches data to an alternate path when the primary path fails.

The NetWin 200 will be managed by new software, the NaviSphere Agent for Windows Storage Server, which lets users create, delete and expand volumes, as well as monitoring and alerting for array faults or other problems. Like EMC's other NAS products, the NetWin 200 also can be managed from a Web interface or the Microsoft Management Console. It will work with EMC's OnCourse software for the automatic replication and distribution of files across the network. The front-end server runs Windows Storage Server 2003; the CX200 array runs EMC's Flare operating system.

As for the EMC Celerra NS600G SAN/NAS gateway, sources say it is based on EMC's Celerra NS600 NAS system. Unlike the NS600 though, the NS600G enables an Ethernet connection to separate Fibre Channel storage. The NS600G consists of a decoupled NS600 in which the NAS head can connect to several types of back-end Fibre Channel storage. It will support attachment to Clariion CX400 and CX600 arrays first, followed by connection to EMC Symmetrix arrays. Sources also say EMC is considering allowing the NS600G to work with other vendors' storage arrays.

The new Celerra NS600 NAS system has one controller instead of two and reportedly will be less expensive, although EMC has not announced prices or said when it will be available.

The NetWin 200, which is available now, starts at $50,000 for a 500G-byte configuration. Pricing and availability could not be learned for the NS600G. ■

Get more information online.
DocFinder: 7848
www.nwfusion.com

NAS for Windows

EMC's NetWin 200 is expected to be implemented in a core-to-edge strategy. Features include:

- Up to 4 terabytes of usable capacity.
- Dual Pentium 4 processors.
- A CX200 disk processor enclosure containing 15 disks.
- N+1 redundant cooling, fans, data paths.
- RAID 5 support.
- EMC PowerPath, NaviSphere Agent for Windows Storage Server.
- Web interface, Microsoft Management Console.
- An optional disk-array enclosure for 15 disks.

Female IT professionals cope in a male-dominated industry

■ BY ELLEN MESSMER

SANIBEL, FLA. — As a co-founder of Trend Micro, a $350 million maker of anti-virus and content-filtering products, Eva Chen could be considered one of the most influential women in IT. But when she goes on business trips to Japan with an entourage of software engineers, Chen puts away the business card that lists her title as "chief technology officer and executive vice president" and instead hands out one that reads: "engineering secretary."

The switch is a response to a cultural bias in Japan against women in authority, she said.

"I take engineers into meetings and then pass notes to them for questions I want to ask. They say they're so ashamed," said Chen, who was born in Taiwan and earned a master's degree in business administration and computer science at the University of Dallas.

Chen told of her dual business-card existence during the Executive Women's Forum held earlier this month, attended by about 120 women in IT security. Joyce Brocaglia, president and CEO of recruiting firm Alta Associates, said she organized the forum — which was off-limits to men — to share ideas in a male-dominated profession.

Chen's decision to fade into the background in order to do business in Japan is one way of coping with gender bias. Some large corporations, including General Motors, say that while obstacles facing women are well known, they are still hard to confront.

"In some cultures, males don't like to take direction from females," said Nick Andreou, engineering group manager for collaboration at GM, in a presentation at the recent Auto-Tech conference in Detroit, adding it can be "taboo in business to discuss these uncomfortable subjects."

But like other sensitive topics, such as race and religion, gender discrimination can't be ignored, Andreou said, not only because it's unfair but because it affects business productivity and relations in an increasingly global world.

"You can't erase all these cultural differences," said Oracle Chief Security Officer Mary Ann Davidson at the Executive Women's Forum. She said she's had cause to confront some of the "knuckle-dragging types from one of these cultures."

But she said women have to be self-critical about management failures of their own: "Some women are queen bees — they say, 'I got here the hard way so I'm going to make it hard [on others].' Hopefully, we'll pass that."

Technical fields such as programming appear to have a stronger reputation as a meritocracy — where merit alone is paramount — than the world of the IT salesforce, where myriad social factors might come more into play.

"There's still a lot of the 'good old boy' syndrome out there," said Elaine Price, CEO of CYA Technologies. "I experience this on a daily basis. So

See Women, page 18

FRANK SIMONETTI

> **"Women have a little catching up to do. But I'm proud to say I work for an organization that recognizes that."**
>
> **Rhonda MacLean**
> Senior vice president and director of corporate information security, Bank of America

NewsBits

Heat still on VeriSign's SiteFinder

■ VeriSign, under fire for launching its SiteFinder URL-redirection service earlier this month, is creating a technical review panel of Internet experts to evaluate the service. SiteFinder redirects unknown URLs ending in .com or .net to VeriSign's site-searching engine. The service caused an uproar in the Internet community, leading the Internet Corporation for Assigned Names and Numbers to ask VeriSign to voluntarily suspend the service. While VeriSign is creating the SiteFinder panel in reaction to complaints from ICANN and others, it is pleased with the site's performance, says spokesman Tom Galvin. "We're pretty gratified with the level of use," Galvin says, adding that SiteFinder has had about 100 million visitors during its first 10 days, and of them about 20 million visitors have used the site's tools. Meanwhile a pair of companies sued VeriSign over SiteFinder. Domain name registry Go Daddy Software and search-engine company Popular Enterprises claimed VeriSign misused its position as registrar to launch SiteFinder for its own gain.

'Net tax ban called drain on states

■ Legislation intended to ban taxes unique to the Internet could end up exempting many telecommunications services from state and local taxes, costing states billions of dollars a year, according to a group representing 45 state governments. The Internet Tax Nondiscrimination Act, which passed the U.S. House of Representatives Sept. 17, was amended to define Internet access. The bill's authors intend to exempt Internet access from taxes, as well as telecom services offered over the Internet, which would include the growing trend of offering voice telephone services through packet switching technology, according to the Multistate Tax Commission. The Internet Tax Nondiscrimination Act, which has not yet passed the Senate, would permanently replace a moratorium on Internet-only taxes that has been in place since 1998. The MTC released a study last week that said the bill could cause state and local governments to collectively lose between $4 billion and $8.75 billion a year by 2006, rather than the $500 million projected when the bill was originally introduced.

Sophos snaps up ActiveState

■ Anti-virus vendor Sophos last week acquired e-mail content-filtering software vendor ActiveState for $23 million. Sophos indicated it made the acquisition to play a role in the anti-spam and e-mail content-filtering market. Among its future plans, Sophos says it intends to develop ActiveState's PureMessage product, which runs on Unix, for the Windows platform.

COMPENDIUM

Instant breakup

The Philadelphia Inquirer **reported last week on a cad who broke up with his girlfriend via instant messaging. Still, maybe that's not quite as bad as a Malaysian court ruling earlier this year that men could divorce their wives over wireless-phone text messages.** *Read more of Compendium at www.nwfusion.com, DocFinder: 7850.*

TheGoodTheBadTheUgly

HP has their back. HP's Linux customers can sleep a bit better now that the company has offered to foot the bill for any possible legal action by The SCO Group, which has roiled the Linux world in an ongoing intellectual-property dispute. HP becomes the first major systems vendor to do so.

Sit on it. We're hope you're sitting down for this. Researchers at Trinity College in Dublin are making headlines for their work on a networked sofa that can tell who is sitting on it by measuring their weight and lets couch potatoes do everything from ordering food to controlling appliances without lifting a finger. ➤

BRIAN GAIDRY

Visa problems. The U.S. State Department's online system for checking whether visa applicants have a terrorist or criminal history fell victim last Tuesday to a computer worm and was disabled for several hours. The government stressed that the W32.Welchia worm affected its system for accessing the data, but not the database itself.

Symantec purchases PowerQuest

■ Symantec announced last week that it will acquire storage-management vendor PowerQuest for $150 million to improve its server and desktop management and protection software. Symantec plans to integrate PowerQuest's disk imaging, provisioning and disaster-recovery technologies into its software for managing and protecting servers, desktop and laptop computers. PowerQuest also provides data migration and life cycle management software, which Symantec says it will add to its portfolio.

Boeing to expand in-flight 'Net coverage

■ Boeing is about to lease space on a satellite above the Atlantic Ocean, filling a coverage gap in its Connexion by Boeing in-flight Internet service. The new leasing agreement is for two transponders on the Intelsat 907 satellite, which is stationed above the Atlantic Ocean at 27.5 degrees west, the company says. The Ku-band spot-beam coverage provided by the transponders encompasses Northern and Central Europe, Iceland and the eastern part of Greenland, and will be used by Connexion to service aircraft flying between Europe and North America. The Connexion service, which has yet to be commercially launched, offers a broadband Internet connection to passengers on aircraft on which the system has been installed. Transmission speeds vary with conditions, but maximum capacity is 20M bit/sec downstream to the aircraft and 1M bit/sec upstream from the aircraft.

Amazon poised to enter search market

■ Amazon.com is reportedly working to develop a Web search technology that will help it compete against Google and Yahoo when it comes to directing consumers to merchandise online. The Internet retail giant has set up a subsidiary called A9 in northern California to develop the search technology and is recruiting a host of software engineers from Silicon Valley, according to a report in the online edition of *The Wall Street Journal*. In addition to creating and using the search service, Amazon plans to market the A9 technology to other sites. Amazon declined to confirm or deny the report.

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Debate highlights VoIP hopes and fears

BY PHIL HOCHMUTH

BOSTON — As vendors at last week's Voice on the Net conference pushed new applications for making IP telephony ubiquitous and more multimedia-friendly, attendees cautioned that plenty of basic issues still need to be resolved.

Those issuing warnings at the convergence industry's annual gathering weren't discounting the notion that Session Initiation Protocol (SIP)-based presence applications hold promise for connecting workers anywhere via video, voice and instant messaging. They are more concerned about how to secure IP PBXs from viruses, the shortage of enterprise voice-over-IP (VoIP) management tools and the complexities of rolling out converged applications beyond simple dial tone and calling features.

"SIP and presence are more of a high-talk item than something that's actually being implemented," said Dustin Goodwin, a network engineer with the New York integration firm VoIPexperts.com, which offers IP PBX and VoIP network planning and installation services.

Security issues can complicate the rollout of SIP-based conferencing and any other applications that include IP voice. While users might think of voice as just another IP application, "worms and viruses change all that," Goodwin said.

More than 2,000 people attended Fall 2003 VON last week in Boston.

Many companies he has worked with have deployed IP PBXs and phones on secured VPNs, and even behind internal firewalls on the LAN, to avoid having a virus or other intruder bring down the phone system.

This is the practice at Florida International University, where Cisco's CallManager IP PBX and IP phones are deployed on a secured virtual LAN separate from other public servers.

"Voice is really separated from data by VLANs and other network controls, so we think it's pretty secure," said Al Losada, director of telecommunications at the Miami school. "But the challenge with this kind of architecture is that it's difficult to roll out applications that integrate voice and IP PBX functionality."

An example of this is a call-center application Losada wants to install that would require PCs and IP phones to interact with the IP PBX. To do so, he would have to let PCs on the network see the IP PBX, which could leave the phone system at the mercy of a virus-infected PC.

Others at VON said the complexity of VoIP tempered their enthusiasm for the newfangled applications on display.

"It still takes a lot longer than it should to set up new users," despite the promise of easier administration in a converged IP network, said Tom Stephens, network group leader at Cray, the Seattle supercomputer manufacturer. The Cisco CallManager-based network installed several years ago at Cray runs smoothly, though he said "there's more fulfilling work my staff could be doing than setting up IP phones." He also said that more troubleshooting tools made specifically for VoIP networks are needed.

Vendors Avaya, Cisco, GoBeam, M5 Networks and Nortel got a chance to harangue each other about shortcomings in each others' VoIP products during an IP PBX Shootout debate hosted by *Network World* Editor in Chief John Dix. Avaya and Nortel representatives took turns criticizing Cisco's IP telephony products, specifically citing potential vulnerabilities in Cisco's CallManager IP PBX, which is based on Windows and SQL Server.

Cisco Technical Marketing Manager Bill King questioned Nortel's lack of major customers for its IP PBX products, and the delays and strategy shifts in its enterprise VoIP business. He also challenged Avaya's recent statements in market-share gains, saying the vendor was muddling its PBX and IP voice business

See VON, page 17

AT&T adds VoIP to managed VPN service

BY DENISE PAPPALARDO

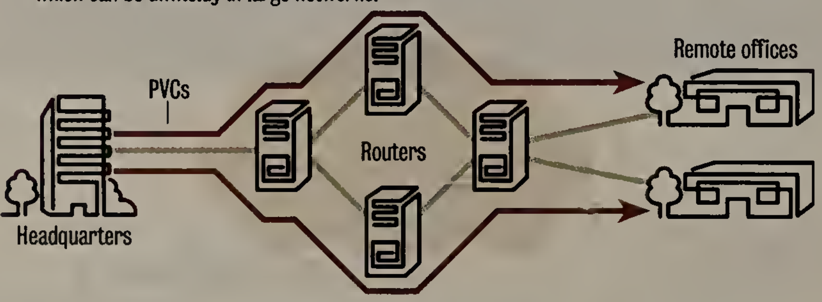
AT&T last week announced a voice-over-IP option for its managed VPN service that promises multinational customers an easier way to support voice between sites around the world.

The service will let users integrate voice and data trunks, which provides for unified billing and might save money, although AT&T has not released pricing. And for customers already running voice on data networks, the option promises to reduce complexity and increase network flexibility by eliminating the need for permanent virtual circuits (PVC).

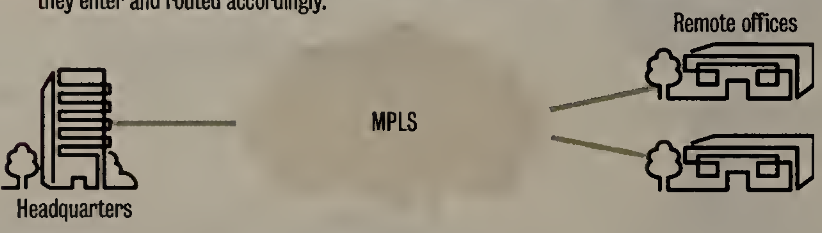
Getting more out of your VPN

AT&T's new VPN VoIP option will integrate voice and data trunks, providing unified billing and ostensibly savings, although pricing is not yet available. Customers already running voice over frame relay can use the MPLS-based service to do away with permanent virtual circuits.

❶ Voice over frame requires customers to build and maintain PVCs to each remote location, which can be unwieldy in large networks.



❷ With the new option, sites simply are tied to the MPLS cloud and voice packets are tagged as they enter and routed accordingly.



Frame relay PVCs, used to route traffic between fixed locations, can be unwieldy in a fully meshed data network supporting hundreds of sites. Because AT&T's Enhanced VPN service is based on Multi-protocol Label Switching, the new VoIP option means each site can be tied into the cloud and packets will be tagged as they enter and routed accordingly so customers don't have to predefine PVCs.

AT&T says the service will support on-net and off-net calling and will be available in 40 countries by year-end. Customers will be able to use existing frame relay, ATM or IP connections to access the service.

But customers looking for the VoIP features will have to be patient because the service will not be available for another seven to nine months — by the end of the second quarter.

As the de facto incumbent vendor [AT&T] doesn't always have to be the first, but when it does roll out [a new technology] it has to work," says Zeus Kerravala, a vice president at The Yankee Group. He says AT&T might be lagging behind some competitors because it has invested time in improving customer service support. AT&T's Business Direct Web portal lets Enhanced VPN customers access real-time network performance statistics and view invoices.

Equant has offered multinational VoIP support with its managed VPN service that reaches approximately 240 countries for more than two years. "Equant is probably our prime competitor with this offer," says Joe Aibinder, director of AT&T voice over Internet services.

Equant's service, like AT&T's, is based on the International Telecommunication Union's (ITU) H.323 VoIP specification. MCI offers a similar service domestically, but uses the Session Initiation Protocol standard, which is believed to be the superior of the two technologies. As new VoIP applications emerge they will be based on SIP, not H.323, Kerravala says.

AT&T says it is using SIP signaling in the core of its network and will be able to upgrade to SIP-compliant devices and applications when the technology is more mature.

AT&T would not provide pricing or service-level agreement (SLA) information for the VoIP offering, saying it is "too premature," considering the service might not rollout until June.

Besides cost, Kerravala advises customers to look at standard SLA items such as latency, packet loss and jitter.

AT&T says it will include MOS measurements on its Business Direct Web Portal, where customers can monitor performance on their VPN. It also says it will provide standard latency, packet-loss and jitter-performance information for customer's voice traffic.

The carrier says it will offer its Enhanced VPN VoIP users a flat rate for domestic calling and users should expect to pay 3 cents or less per minute for off-net international calls. ■

■ AT&T developing early warning tool for viruses. PAGE 31

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Calif. anti-spam law called excessive

Experts say toughest-in-the-nation legislation could hurt legitimate senders.

BY CARA GARRETSON

While California's tough new anti-spam law aims to stomp out unwanted commercial e-mail, the legislation enacted last week could also hamstring legitimate businesses looking to communicate with customers.

Ramifications of the state's Senate Bill 186, signed into law by Gov. Gray Davis, will be felt all over the country because it applies not only to e-mail sent from California but also to all messages sent to residents of the state, critics say. They say the law will do little to deter professional spammers responsible for the majority of clutter in e-mail boxes, and force businesses that e-mail their customers to spend extra time and money ensuring they have recipients' consent. The law makes it a crime to send spam, slapping a $1,000 fine for each unsolicited e-mail sent, and lets individuals, ISPs or the state file suit against alleged spammers or the company doing the advertising or promoting in the e-mail.

"E-mail is a very legitimate way for individuals and businesses to communicate," says Bill Glazier, vice president of marketing at anti-spam service vendor Postini. "Any law that restricts the legitimate use of e-mail is unfortunate."

The law makes it illegal to send e-mail that advertises or promotes goods, services or credit without the direct consent of the recipient. Direct consent is defined in the law as a positive response to a "clear and conspicuous request" from the sender asking if the recipient wants to receive the e-mail — also known as opt-in — or a direct request from the sender to receive the e-mail.

The law is unclear on whether companies that purchase lists of e-mail addresses from list brokers have the direct consent of recipients.

Considered the most sweeping and stringent anti-spam law to date, it could become a model for other state or federal efforts. "The time has come for unscrupulous spammers to stop feeding our e-mail in-boxes a daily diet of unwanted e-mail," Davis said.

Many companies that depend on e-mail marketing and communication have built internal databases of customers who have opted in to receive e-mail, says Brian Niles, CEO of TargetX.com, a provider of e-mail marketing software and services, and therefore shouldn't be negatively affected by the law.

"It's the people renting out e-mail lists and doing prospecting — the law's going to affect them," he says. "For folks thinking of building an in-house database, this law may give them more of an incentive to look in that direction."

California's answer to spam

State joins more than 30 others in legislating junk e-mail.

What:	SB 186, a law enacted last week that makes it illegal for spam to be sent from California or to a California resident.
When:	Takes affect Jan. 1.
Target:	Companies sending unsolicited commercial e-mail that stand to benefit financially. There are exemptions for sending e-mail to recipients who have opted in, and for companies that have existing business relationships with recipients.
Who can sue:	Individuals, companies, ISPs and the state of California.
Fines:	$1,000 for each unsolicited e-mail sent, up to $1 million for each spam campaign.

But there's significant expense associated with building an in-house database of opt-in recipients. And given the California law's hefty fines, even companies that already have such databases would be wise to scour them to ensure they have consent — and can prove it — before hitting the send button, says Deborah Thoren-Peden, a partner with law firm Pillsbury Winthrop. "This law will probably cost companies a

See Anti-spam, page 16

IEEE pushes for faster WLAN throughput

BY JOHN COX

Think about a wireless LAN with enough throughput to match your switched Ethernet infrastructure.

That's what the IEEE is thinking about.

Last week, the international standards group launched a working group charged with crafting changes to the 802.11 WLAN standard so that these networks would deliver at least 100M bit/sec. That number is throughput — what users see when they transfer a file — as distinct from the data rate, which is the raw speed before you subtract the overhead associated with the protocol.

In the case of 802.11, the overhead adds up to a whole lot, typically more than half of the data rate. An 802.11b access point, rated at 11M bit/sec, typically gives a throughput of less than 6M bit/sec. The 802.11a and 802.11g hardware can give users about 18M to 22M bit/sec. The data rate for both is 54M bit/sec.

Silicon makers have boosted WLAN throughput to about 100M bit/sec. The catch is that you have to have the same chips in both the client and the access point, and high throughput sacrifices conformity to the 802.11 specification. Atheros Communications, the first vendor with a 54M bit/sec 802.11a chipset, markets CMOS chips that support what it calls "Super G" and "Super A/G" — proprietary boosts of up to 100M bit/sec throughput.

Atheros plans to contribute these and other technologies to the 802.11n task group, as it's called in IEEE terms. "The greatest challenge will be to deliver higher performance while reducing power and cost," says Craig Barratt, Atheros president and CEO.

A reason to embrace wireless technologies is that high-throughput WLANs will eliminate cabling costs. That's only true of the wires needed to connect clients to wiring closets. WLAN access points need to link via Ethernet cable to wiring closet switches.

Network executives already seem to be discounting high-throughput claims that are based on their WLAN experience. "Unless you are sitting right under the access point, you just don't get the maximum throughput," says Dewitt Latimer, deputy CIO and CTO at the University of Notre Dame in South Bend, Ind.

WLAN throughput falls off the farther a client device moves from an access point. The drop depends on how much metal, wood, concrete and other construction materials is between the two devices. In almost every case today, an access point is a shared medium: whatever throughput it can deliver is divvied up among the users connected to that access point.

"Most practical applications, such as three students sitting under a tree working on a paper [with wireless notebooks], tend to be insensitive to bandwidth. I don't think high-throughput WLANs will be a big driver until we see things like streaming media applications being untethered," he says.

The 802.11n task group's first order of business will be to define a group of application scenarios, describing how the high-throughput technology will be used. In turn, these become the basis for evaluating and comparing what's expected to be several technologies contributed by different vendors, according to Brian Mathews, publicity chair for the IEEE 802.11 Work Group that oversees this standards work.■

Something old, something new

A primer on the IEEE's WLAN efforts, including the new 802.11n high-throughput technology.

In the works:	
802.11d	Enables 802.11 hardware to work in various countries where it can't today.
802.11e	Enhances the 802.11 Media Access Control layer for quality-of-service features, such as prioritizing voice or video traffic.
802.11f	Recommends practices for WLAN equipment makers so that all their 802.11 access points can interoperate.
802.11h	Supports measuring and managing the 5-GHz radio signals in 802.11a WLANs.
802.11i	Repairs weaknesses in the Wired Equivalent Privacy encryption scheme.
802.11k	Creates a way for access points to pass specific radio frequency health and management data to higher-level management applications.
802.11n	Designed to boost throughput, not raw data rate, to 100M bit/sec. The idea is to make WLANs feel like 100M bit/sec switched Ethernet LANs.
In the books:	
802.11a	Describes WLANs for the 5-GHz band, with a data rate of 54M bit/sec.
802.11b	WLANs in the 2.4-GHz band, 11M bit/sec data rate.
802.11g	Also in the 2.4-GHz band, but uses 802.11a modulation to reach 54M bit/sec.

It's time for the death of fingerpointing.

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Web services mgmt. gathering steam

■ BY JOHN FONTANA

With management still a major question in the Web services model, start-ups, major vendors and standards bodies are stepping up efforts to provide answers to corporate customers.

This week, Actional and AmberPoint will unveil upgrades to their Web services management platforms. And the Web Services Distributed Management technical committee at the Organization for the Advancement of Structured Information Standards (OASIS) will meet to discuss the creation of standard management protocols. The group plans to have an initial specification defined early next year.

And next month start-up Westbridge Technology will enhance the management capabilities of its software.

This activity follows HP's purchase of Web services management start-up Talking Blocks earlier this month and Computer Associates' acquisition of Adjoin, another start-up, in July.

"Companies like HP and CA are jumping into the market whole-hog," says Jason Bloomberg, an analyst with ZapThink. "They want their tools to be fully enabled for Web services management. And the smaller players are trying to get enough traction for when the big guys start to sign up customers."

Bloomberg says companies realize that next year there will be a broader acceptance of Web services and service-oriented architectures (see related story, page 63). With that will come the need for software focused on the acknowledged weak points of Web services: security, reliable messaging, business-process workflow and management.

"You can build Web services easy enough, but management so you can promote reuse is really important," says Scott Dowell, IT manager for Science Applications International, which is in the early stages of building a services-oriented architecture. "Once we started to expand our Web services, such as with our employee self-service portal, we knew we had to get something to help manage those services," says Dowell, who uses software from Actional.

Actional next week will provide additional help with the release of Actional 5.0. New features include SoapStation Edge, a Web services broker with an integrated XML firewall that includes access-control and message-integrity capabilities.

"IT thinks of management now as how to monitor things and we do a lot of that. But we are now laying down key infrastructure components and control mechanisms so you can see what's going on and change it to rectify problems," says James Phillips, chief strategist for Actional.

AmberPoint is adding to its capabilities with its Exception Manager, which can detect faults or problems within messages.

Competitor Westbridge also has advancements in the works with the release next month of its XMS 3.0. The software will focus on managing collections of Web services that are part of a larger Web service.

These three small vendors, and competitors such as Blue Titan, Confluent and Infravio, are battling major management vendors that also are eyeing Web services.

HP's purchase of Talking Blocks was a move to incorporate Web services management into the company's broader Adaptive Infrastructure model. And CA plans to use its acquisition of Adjoin to build Web services into its broader UniCenter platform. Later this year, CA is scheduled to release UniCenter Web Services Distributed Management, which uses a set of agents to automatically discover Web services and monitor service characteristics of Web services transactions.

IBM is integrating its WebSphere application server and its Tivoli management software to address service-oriented architectures. Microsoft is scrambling to define its management strategy based on its Distributed Systems Initiative. Next month the company will announce it is integrating tools from AmberPoint with Visual Studio.Net so developers can build applications that are management-aware.

In the background, OASIS is developing standards that would let corporate users mix and match software from all these vendors.

Two weeks ago, CA, IBM, and Talking Blocks submitted a proposal called WS-Manageability, which defines what it takes to manage a Web service. In July, HP submitted its Web Services Management Framework.

OASIS's Web Services Distributed Management Group hopes the two will form the foundation for a single protocol not only to manage Web services but also to build Web services interfaces into management software. ■

Upgrade path

Actional and AmberPoint this week will upgrade their products for Web services management.

Vendor	Product	Description
Actional	Actional 5.0	Adds three features: SoapStation Edge, combines firewall and monitoring agent; Service Stabilizer, self-healing technology; Looking Glass MyServices, creates custom views of select group of Web services.
AmberPoint	Exception Manager	Third product in lineup, Exception Manager detects, diagnoses and resolves exceptions in operation of Web service. Includes Exception Workbench to define exceptions.

■ See related column on Web services management. PAGE 43

IBM gives on-demand computing a boost

■ BY ANN BEDNARZ

IBM sought to advance its $10 billion on-demand computing initiative on several fronts last week, announcing new grid software for aggregating computing resources and middleware for extending business applications to mobile devices. CEO Sam Palmisano, too, lent his weight to the cause, reiterating IBM's on-demand vision before a gathering of venture capitalists and software vendors.

Grid computing is a key element of IBM's on-demand strategy, which seeks to make software and systems more responsive to changing business needs. To that end, IBM unveiled grid computing applications tailored to companies in the financial industry. The vendor also announced ongoing grid projects with a handful of commercial and institutional customers, including Morgan Stanley and Hewitt Associates.

IBM teamed with business-intelligence software maker SAS Institute for one of its new vertical grid applications, Grid Offering for Analytics Acceleration. The software incorporates SAS's credit-scoring application and is aimed at providing banks with tools for mining customer information and generating sophisticated statistical models more quickly, IBM says.

With partner DataSynapse, IBM developed Grid Offering for Risk Management and Compliance to help businesses in the capital markets and retail banking industries create a grid infrastructure that can support real-time credit-limit monitoring.

Separately, IBM announced product upgrades and partnerships in support of its pervasive computing strategy, an ongoing effort to provide end users with on-the-fly access to any content, from any device, on any network.

New to its portfolio is Extension Services for WebSphere Everyplace, embedded middleware that is aimed at making it easier for companies to deliver enterprise applications to wireless devices. The technology doesn't require developers to rewrite applications for mobile devices, IBM says. With Extension Services, end users can run applications on mobile devices that are intermittently connected to the network, and remotely download only the portions of applications and data they need.

Meanwhile, Palmisano addressed about 300 venture capitalists and software vendors at IBM's Palisades, N.Y., facility last week, where he emphasized on-demand computing and Big Blue's commitment to partnering with independent software vendors (ISV).

His message, which was echoed by each of the senior IBM executives who also took to the podium, "stands in contrast to some other large software companies that have tended to compete with venture-backed companies and independent software vendors," says Brooke Coburn, managing director at venture capital firm Carlyle Group in Washington, D.C., who attended the event.

IBM highlighted partnership opportunities and the importance of collaborating with specialized software makers, Coburn says. Microsoft, meanwhile, is putting itself in a position to compete, rather than partner, with enterprise application vendors, he says. "It's just a matter of time before they suck all of the oxygen out of the ISV market."

Palmisano first detailed IBM's now familiar on-demand vision last October, committing $10 billion in research and development, acquisition and marketing funds to the effort. He's not alone. Myriad management, systems, server and storage vendors including Computer Associates, HP, Microsoft and Sun also have articulated utility computing strate-

Utility computing gap

Technology vendors expect to deliver pay-as-you-go IT infrastructure within three to five years, but users expect it within 18 to 24 months, says consulting firm Saugatuck Technology.

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3Com jumps back into router arena

■ BY PHIL HOCHMUTH

3Com will revive another of its previously abandoned enterprise network lines this week as it launches a series of WAN routers for enterprise branch and central offices.

The 3Com Router 5000 series is designed to connect corporate sites, from small branch to large regional offices, with a variety of WAN links. The gear is also part of 3Com's strategy to offer a complete network product menu — from network interface cards to switches and routers, IP telephony and security gear — with a common management platform across the portfolio.

Observers say the router launch is a good step in 3Com's road back into large corporate networks, although image challenges linger because of the company's retreat from that market several years back.

3Com's Router 5000 series includes models for branch offices as well as headquarters.

In addition to supporting a variety of WAN options, such as T-1, frame relay and ISDN, the new 5000 series boxes also include integrated IP Security VPN functionality, and firewall capabilities with stateful packet inspection and traffic filtering. 3Com says quality of service also has been added into the 5000 series router software, letting delay-sensitive WAN traffic — such as voice over IP — be tagged and prioritized.

The new product line includes the 5009, with a single WAN interface module slot for small branch offices, the three-slot 5231 for regional offices, and four-slot 5640 and eight-slot 5680 for consolidating WAN links at a company's headquarters. WAN modules for the 5000 series include full and fractional T-1/E-1, Primary Rate Interface, ISDN and 10/100M bit/sec Ethernet products. All 5000 series modules are interchangeable.

The 5000 series launch is a reprise of 3Com's earlier PathBuilder product line, which included WAN routing, VPN and firewall products for midsize and large organizations. This line was discontinued in 2000, along with 3Com's CoreBuilder LAN switching line.

One user of 3Com's old PathBuilder routers, Jevic Transportation of Delanco, N.J., plans to install the 5000 series routers in its 12 offices nationwide.

"We'd been using the older 3Com routers after they discontinued the product, and they worked fine for us," says Anthony Holden, senior datacom analyst for Jevic, which operates a cross-country freight delivery service. "3Com kept giving us good support for those products."

The 5000 series boxes will connect Jevic sites via point-to-point T-1 connections. Jevic uses its WAN to run an application that syncs up freight delivery information in real time.

The 5000 series routers are resold from Huawei Technologies. The 5000 is based on Huawei's Quidway WAN routers, which have been sold in Asia for the past two years with an installed base of about 160,000 units, according to 3Com. 3Com this March announced a joint venture with Huawei, which let it sell 3Com-branded chassis switches and routers.

Shortly before the joint venture was announced, Cisco sued Huawei, saying the company violated Cisco intellectual property and copyrights. A federal court in June ruled that Huawei must remove code similar to Cisco's IOS code from its products and stop distributing product manuals that are similar to Cisco's. 3Com says the 5000 series does not violate any Cisco intellectual property.

In launching a line of routers, 3Com says it hopes to attract enterprise network customers looking for an alternative to Cisco, which dominates the enterprise access router market with about 70% market share.

"3Com has made its bet, and that's to become a major enterprise player again," says Zeus Kerravala, an analyst with The Yankee Group. And with the 5000 series release, he says, "this might work. There isn't much out there to challenge Cisco in the router market. At least this is an alternative." Kerravala says 3Com's biggest challenge will be getting back on buyers' short lists of end-to-end vendors. "3Com didn't burn its bridges with large enterprise customers, but it did singe them," he says.

3Com says its 5000 series gear will be priced at about 30% to 50% less than comparably equipped Cisco routers. Along with underselling Cisco, another part of 3Com's enterprise strategy is to offer an end-to-end network management system and feature set. This includes the 3Com Network Administrator software, which it also launched this week. The management application lets administrators configure and monitor both Huawei-based 3Com gear, such as the Switch 7700 and the Router 5000 series, and existing SuperStack LAN and NBX IP telephony gear.

The 3Com 5009 is priced at $1,400, and the 5231 is priced at $2,500. The 5640 and 5680 cost $4,000 and $6,500, respectively. All hardware will be available next month. The 3Com Network Administrator is expected to ship in November for $5,000. ■

NetIQ refreshes systems mgmt. tools

■ BY DENISE DUBIE

NetIQ this week is scheduled to ship software that builds on its expertise in managing Windows environments but that also extends its reach into networks where other operating systems are prevalent.

Version 3.0 of AppAnalyzer, a program that reports on usage and other aspects of assorted Microsoft software, now includes support for Windows Server and Exchange 2003. The software features new Outlook Web Access usage reporting, meaning it can help network managers track the top users logging on to Outlook via the Web, the browsers being used and the time of day or week for peak usage. This data then can be used to more efficiently balance loads across servers, the company says.

Pricing will be $600 for a 100-user mailbox pack. There also will be a $2,500 charge for the WebAdmin console for up to five users.

Also new is a Web console for NetIQ's existing AppManager. This lets administrators centrally manage Windows, Unix (AIX, HP-UX and Solaris) and Linux platforms from any browser.

One reason NetIQ needs to expand its offerings from being Microsoft-centric to multivendor-oriented is that recent announcements from Microsoft show it plans to do more to manage its own systems. Currently, NetIQ has the biggest share of the Windows systems management market, analysts say.

"NetIQ will face more and more of the onslaught of Microsoft as a direct competitor, and obviously that is not a good position to be in," says Glenn O'Donnell, a research director with Meta Group. "Microsoft provided them a great stream of short-term revenue, but it could diminish in two to three years."

The core AppManager technology runs on Windows, while Unix boxes are monitored through agents. NetIQ monitors many components in the application infrastructure, including various flavors of Unix-based Web servers, application servers, load balancers, cluster support, e-mail, and file and disk managers.

The Web Console costs $2,500 for five concurrent users. Modules for NetIQ's Web infrastructure management solution start at $750 per server.

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Anti-spam

continued from page 12

significant amount of money to come into compliance," Thoren-Peden says. "Companies will have to drill down to every aspect of their business [to see if] they have e-mail lists that touch California, and make sure they have consent."

The law also stipulates that all legitimate commercial e-mail must contain an opt-out option so that recipients can have their name removed from e-mail lists by checking a box on a Web site or calling a toll-free number. This stipulation changes the opt-out option from a one-time opportunity given to recipients when they sign up to receive e-mails to an on-going chance to halt electronic communication, Thoren-Peden says.

The new law empowers individuals and companies, not just the state government, to go after spammers.

However, it's questionable how many will do so, says Andres Kohn, director of product management at anti-spam software start-up Proofpoint. "Companies are trying to cut their costs, they're not going to go to court and prosecute spammers on their own," he says. And historically, state prosecutors have not focused on pursuing spam cases, Kohn adds.

"It doesn't matter what's in the law if the law goes unenforced. And pretty much all spam laws go unenforced," echoes Paul Hoffman, director of the Internet Mail Consortium. "California has no money, so how are we going to enforce it?"

Whether legislation — particularly on a state level — can thwart spam is a topic of debate. Thirty states have spam laws on their books, and a handful of bills are wending their way through Congress, although no federal law has been enacted.

That leaves businesses with a patchwork of state laws to consider when sending e-mail, and forces them to try to associate a state with an e-mail address, which isn't always possible. In addition, any federal law passed could override state laws, depending on how the federal law is written, which could render the work companies do to comply with state laws a waste of time.

Senior Editor Carolyn Marsan contributed to this story.

VON

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performance to paint a rosier VoIP picture for itself.

Accentuating the positive

All this is not to say that VON did not serve to highlight the promise of VoIP.

Dennis Baron, senior project director of information systems at the Massachusetts Institute of Technology (MIT), discussed how the university and several others are creating an inter-campus phone network as an alternative to the public switched telephone network (PSTN) using Internet 2 and SIP. The network, which is still in the construction phase, initially will link Georgetown University in Washington, D.C., with Harvard University and MIT in Cambridge, Mass., and Texas A&M University in College Station. Ultimately, the network would serve about 200 major institutions, Baron said.

"Right in the aftermath of 9/11, it was found that e-mail was the best way to communicate," said Baron, recalling that damaged regional carrier networks and an overloaded national phone network made calling difficult. "Many [people at universities] also found that SIP phones were useful," he added.

Based on this premise, the network will link universities via Internet 2 and Paetec Communications, a New York competitive local exchange carrier. During a regional PSTN failure, calls would be rerouted to SIP-based Broadsoft softswitches and media servers at the universities and switched over Paetec's network, where PSTN calls could be terminated. Campus-to-campus calls could be made freely among universities over the SIP-based network.

Jeremy George, director of the advanced networking group at Yale University in New Haven, Conn., said he holds out great hope for SIP-based presence applications that involve voice, video and instant messaging. He says users of Wi-Fi-enabled devices, 3G phones and PDAs that communicate over IP will drive demand for presence applications.

"Presence is the technology that glues these things together," he said. "It will let people know how, when and where other people can be communicated with." ■

SIP-enabled products grab spotlight

Session Initiation Protocol was on the minds of vendors introducing products at last week's Voice on the Net conference in Boston. Nortel introduced software that works with its Multimedia Communications' Server 5100 and 5200 designed to help companies build applications that combine voice, video and instant messaging. The servers are IP- and SIP-based phone switches for enterprise and carrier networks.

The company's Media Application Server software could support an application such as a handheld-based client that uses presence features to set up an IP conference based on voice, video, instant messaging or a mix, Nortel said. The software runs on a Windows-based IBM X335 Server, starting at about $700 per client.

Separately, Spectel announced its Open IP-Enabled Conferencing suite of applications, based on SIP. Spectel said the product lets service providers offer lower-cost IP-based multimedia conferencing and presence management services to customers. The company said the software also can be deployed with SIP-based IP PBXs or IP-enabled PBXs, from companies such as Avaya, for deploying IP conferencing applications as an alternative to public switched telephone network conferencing inside large companies. Pricing was not released.

On the security front, InGate aired its SIParator 20 appliance. The box, which supports 10 to 400 users, would sit at the edge of an enterprise network in front of a firewall and process SIP traffic that would otherwise be blocked. InGate says its box could help businesses secure SIP-based conferencing applications without opening holes in a corporate firewall.

— Phil Hochmuth

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Women

continued from page 7

the 'tough skin' part is important."

Time and again, women at the conference complained that in order to work in IT consulting and sales, they were told they had to learn golf because this is where business is done. Or they had to hang out in the bar scene drinking or pretend to like sports because this is how customer relationships in a male-dominated world are sealed. "I eventually learned to like golf," said one conference attendee who asked not to be named, adding that she faced a golf-or-go mandate at her company.

By the numbers

The Information Technology Association of America (ITAA) estimates the number of women professionals at 25.3% out of an IT workforce of 3.6 million workers.

Recruiting and research firm Sheila Greco Associates, which for five years has tracked upper-level IT hires according to gender at 340 large and small companies, figures that 13% of IT vice presidents and CIOs are women. Their salaries are estimated to be about 9% lower than men's, based on available data.

FRANK SIMONETTI

"Some women are queen bees – they say, 'I got here the hard way so I'm going to make it hard [on others].' Hopefully, we'll pass that."

Mary Ann Davidson
Chief security officer, Oracle

The number of women in IT management hasn't changed much in five years, says Sheila Greco, the firm's president and CEO. But she says there's also a pattern where women in the upper ranks of IT will hire more women than men will — about 25% more.

That women earn lower salaries than men for comparable jobs is not likely because of blatant discrimination per se, but because women often start out in less prestigious jobs that paid less, observers say. Companies tend to offer salaries based on previous compensation, so the more you made before, the more you make the next time.

"Women have a little catching up to do," said Rhonda MacLean, senior vice president and director of corporate information security for Bank of America. "But I'm proud to say I work for an organization that recognizes that."

Surviving in a man's world

While the event in Florida contained plenty of the same kind of tech talk you'd find at any IT-related conference, some of strongest comments pertained to how to survive and thrive in a man's world.

"Guys keep score. They like stats. So if you put an idea on the table, measure it. Do it in numbers or they'll just blow you off," said Peggy Weigle, CEO at security firm Sanctum, during a panel discussion.

While Weigle counts many men as mentors in her career, she said it often has seemed hard for men in business to see her as a person. Many women attending the conference said men brush aside their comments and then steal their ideas.

Not surprisingly, family issues remain a big topic for women in IT. Carolyn Reuss, director of product management at Internet Security Systems, said it was "extremely important" to her that ISS allowed her a flexible work schedule in order to juggle work and family. "I was even promoted while on maternity leave," she added. "I don't know many companies that would do that."

FRANK SIMONETTI

According to the ITAA study on gender and race in IT released in May, the IT profession is mostly white and mostly male. The study, titled "Report of the ITAA Blue Ribbon Panel on IT Diversity," offered some theories on why women lag, suggesting motherhood is one of them.

Why exactly women lag in IT — they earned about 22% of computer science and engineering undergraduate degrees in 2000 according to the ITAA report — has been an oft-debated topic in academia. Professors at institutions that include Carnegie Mellon and Stanford University have churned out theories for years on why more young women aren't drawn to high tech.

"It's the milieu in computer science that women don't like as much. They see the human interactions in other departments are more exciting," says Eric Roberts, professor of computer science at Stanford. Computer science is seen as "male-dominated," he says.

"Guys keep score. They like stats. So if you put an idea on the table, measure it. Do it in numbers or they'll just blow you off."

Peggy Weigle
CEO, Sanctum

Tracy Futhey, CIO at Duke University, said she benefited during her computer science studies at Carnegie Mellon from the proactive campaign there to get women involved in IT.

Although most of her 300-person technical staff are male, Futhey said including women in any new technology initiative is good practice so as to fully understand the effect on the end user. "It's important to get all the perspectives around the table," she said.

While women's progress in IT might be slow, life does look a lot brighter than it did 25 years ago, some say. Kristina Johnson, dean of Duke's Pratt School of Engineering, described a scene as an 18-year-old student at Stanford where her physics professor asked if she planned to "get married and get pregnant" over the next decade. He said that because if she did, he didn't want her in his physics research program.

"I was turned off by physics," she said, adding that the turning point came when mentors, including Stanford electrical engineering professor Joseph Goodman, inspired her at the start of her career. "He treated men and women the same." ■

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HP thinks small about utility computing

■ BY ROBERT MCMILLAN

HP plans to deliver a slimmed-down version of its Utility Data Center aimed at midsize businesses and departmental users, according to the head of the company's new Adaptive Enterprise Program Office.

"We're looking at small-footprint UDCs," says Nora Denzel, who also serves as senior vice president and general manager of HP's software group. "We don't have an all-in-one solution for the mid-market, and that's the one that we're going to build now."

HP has prototypes of the departmental UDC running in-house and plans to introduce the small-scale offering when UDC 2.0 is announced later this year, says Nick van der Zweep, director of utility computing in HP's enterprise systems group.

The departmental UDC would cost about $100,000 — much less than the $800,000 starting price of HP's current UDC — and most likely would be used to manage 30 to 50 systems running a single application, according to HP.

"We probably will do a sales campaign around specific applications, maybe into the ERP space," van der Zweep says. Manufacturing applications also might be targeted with the new product, he says.

Another feature that seems crucial to a departmental UDC is HP's Topology Manager software, which will be rolled out partially in UDC 2.0. The software uses the Open Grid Services Architecture standard to enable UDCs in different locations to share resources and appear as one "virtual data center," van der Zweep says.

HP introduced the UDC in November 2001 as a way for companies to consolidate IT resources. UDC users plug their hardware into a HP management rack and then employ server and storage virtualization software to automatically assign or remove data center resources to applications when needed.

Automatically configuring a variety of hardware and applications in this fashion has proven difficult, says Paul Mason, vice president of infrastructure at IDC.

"We're a long way from the point where we can consider this to be something turnkey where you can plug it in and it works," he says. "It's just too complicated."

Philips Electronics' semiconductor division is an early HP UDC customer, having consolidated engineering, office application and manufacturing data centers onto one UDC in Nijmegen, Holland. The division has managed to slash its IT costs by more than 40% since it began implementing the UDC in 2001, says Mathieu Clerkx, CIO and senior vice president for supply chain operations at Philips. (Read more about utility computing, page 71.)

HP says about a dozen customers use its UDC technology.

McMillan is a correspondent with the IDG News Service's San Francisco bureau.

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Mercury pushes into apps mgmt.

■ BY DENISE DUBIE

Mercury Interactive last week unveiled a handful of products designed to help customers make better sense of how applications use infrastructure resources and to optimize that infrastructure to support the most important apps.

The company announced about a dozen products and upgrades into what it calls Optimization Centers: IT governance, quality, performance and business availability. Best known for its testing and tuning software and services, Mercury said last year it would expand its products to manage applications and compete with BMC Software, Computer Associates, HP and IBM.

Among the announcements last week were:

- Capacity Planning: software in the performance portfolio that can provide "what-if" analysis on infrastructure and software. The software can test existing network resources against the resources a new application requires, such as bandwidth, CPU on servers and response times on network devices. The collected metrics would help network managers make better investments and determine the cost-effectiveness of rolling out that application, Mercury says.
- Customer Impact: new software in the business availability group that can determine the effect on customers when infrastructure or application performance degrades. The software provides visibility into the availability of applications and systems.
- Performance Tuning: upgraded software in the quality category that includes the best practices for managing PeopleSoft and Siebel Systems applications.

"Mercury is way beyond its testing beginnings and is approaching managing applications from a higher viewpoint than the other guys," says Glenn O'Donnell, a research director at Meta Group. "It is looking at applications from a service perspective, whereas the big guys [BMC, CA, HP and IBM] started out in infrastructure management and are still working up the stack."

Several of the company's new products can be attributed to a summertime buying spree. Mercury, with its $22.5 million purchase of Performant in May, picked up performance testing and tuning technology for Java 2 Platform Enterprise Edition applications. And with the $225 million Mercury put down for Kintana, the company now can incorporate Kintana's business service management technology into new software products such as Business Process Testing and Topaz Service Level Management.

The former will let business managers participate in the testing of new applications to ensure the business requirements are met, and the latter will in real time track infrastructure and application performance against pre-set service-level agreements, the company says.

While details vary, Mercury products generally use server software and distributed agents. Software agents are distributed throughout the network to collect performance and availability data from operating systems, network services, applications and end users. The server software houses the rules engine, which includes predefined settings and fixes for specific problems. The software comes with rules and data models that network managers can accept or customize. The application performance data can be viewed through a Web-based interface that lets network managers track specific metrics based on customer, service, events or other data.

Virginia Linick, vice president of IT at start-up AutoOne Insurance in Melville, N.J., says she saved the company about 10 months of work and $500,000 in getting their new operations up and running. AutoOne used application testing products from Mercury — and professional services for a speedy two-month implementation — to get about 30 Windows, 12 Sun Solaris Unix and two Linux servers up and running to support about 600 end users. The 12 Unix servers support AutoOne's core insurance system, which Linick says would have to have been tested manually without help from Mercury.

"We were looking to minimize our manual testing effort and quickly reload and run through new tests without reconfiguring the product. In start-up mode, time to market is critical," she says. ■

Cisco Catalyst 6500 gets Gigabit Ethernet makeover

■ BY PHIL HOCHMUTH

Cisco last week introduced modules for its Catalyst 6500 enterprise network switch that provide 1G and 10G bit/sec Ethernet ports and new quality-of-service and security features.

Among the new modules is a blade with 24 small form-factor pluggable Gigabit Ethernet ports, which can be configured for copper or fiber and costs $15,000.

A 48-port blade also now is available that supports 10/100/1000M bit/sec Ethernet on each port and supports Jumbo Frames, which allows Ethernet frames as large as 9K bytes (the IEEE standard is 1.5K bytes). Jumbo Frames can be useful for moving large blocks of data over a LAN, such as for network backup. Like the 24-port blade, it costs $15,000.

A daughtercard, priced at $7,500, will be available next month for both blades, adding features such as IPv4 and IPv6 traffic forwarding, QoS and security policy enforcement. The card lets the modules handle these functions locally, which Cisco says frees up a Catalyst 6500's central processing module.

Also on the daughtercard is a "Call Home" Event Notification feature, which lets a Catalyst 6500 contact network staff via pager or mobile phone in the event of a system failure or other predetermined network trigger.

Cisco also announced optical ports for its four-port 10G bit/sec Ethernet modules, which were introduced in March and cost $20,000. The optical inserts let users deploy 10G bit/sec Ethernet over multi-mode fiber. They include 850nm 10GBase-SR and 1310nm 10GBase-LX4 inserts, which cost $3,000 and $4,000, respectively. Both are based on the XENPAK design standard for 10G bit/sec Ethernet modular optics. The 10GBase-SR insert can be used to run 10G bit/sec Ethernet over multi-mode fiber up to 200 feet, while the 10GBase-LX4 can stretch 10G links up to 1,000 feet.

Cisco Catalyst 6500 switches with 10 Gigabit Ethernet will be going into the new Stata Center at MIT, a computer science and artificial intelligence research lab that will open in next year in Cambridge, Mass.

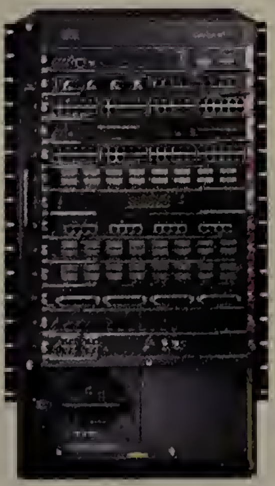
More than 40 Catalyst 6500s will go into the facility, providing 10/100/1000 ports to users at the LAN edge, and with 10G uplinks to the core. Installing network pipes this fat in the new facility was an easy decision, says Jack Costanza, director of IT for Computer Science and Artificial Intelligence laboratories at the university.

"We want to make sure that slow network plumbing won't be the thing that stops people from conducting cutting-edge research," he says. ■

Cisco's new Gig

New offerings for the Catalyst 6500 switch include:

- A 24-port Gigabit Ethernet blade that supports copper and fiber.
- A 48-port blade with 10/100/1000M bit/sec available on each port.
- A daughtercard for adding IPv4 and IPv6 traffic forwarding, QoS and security policy enforcement on the 24- and 48-port blades.
- Optical ports for previously available four-port 10G bit/sec Ethernet module.



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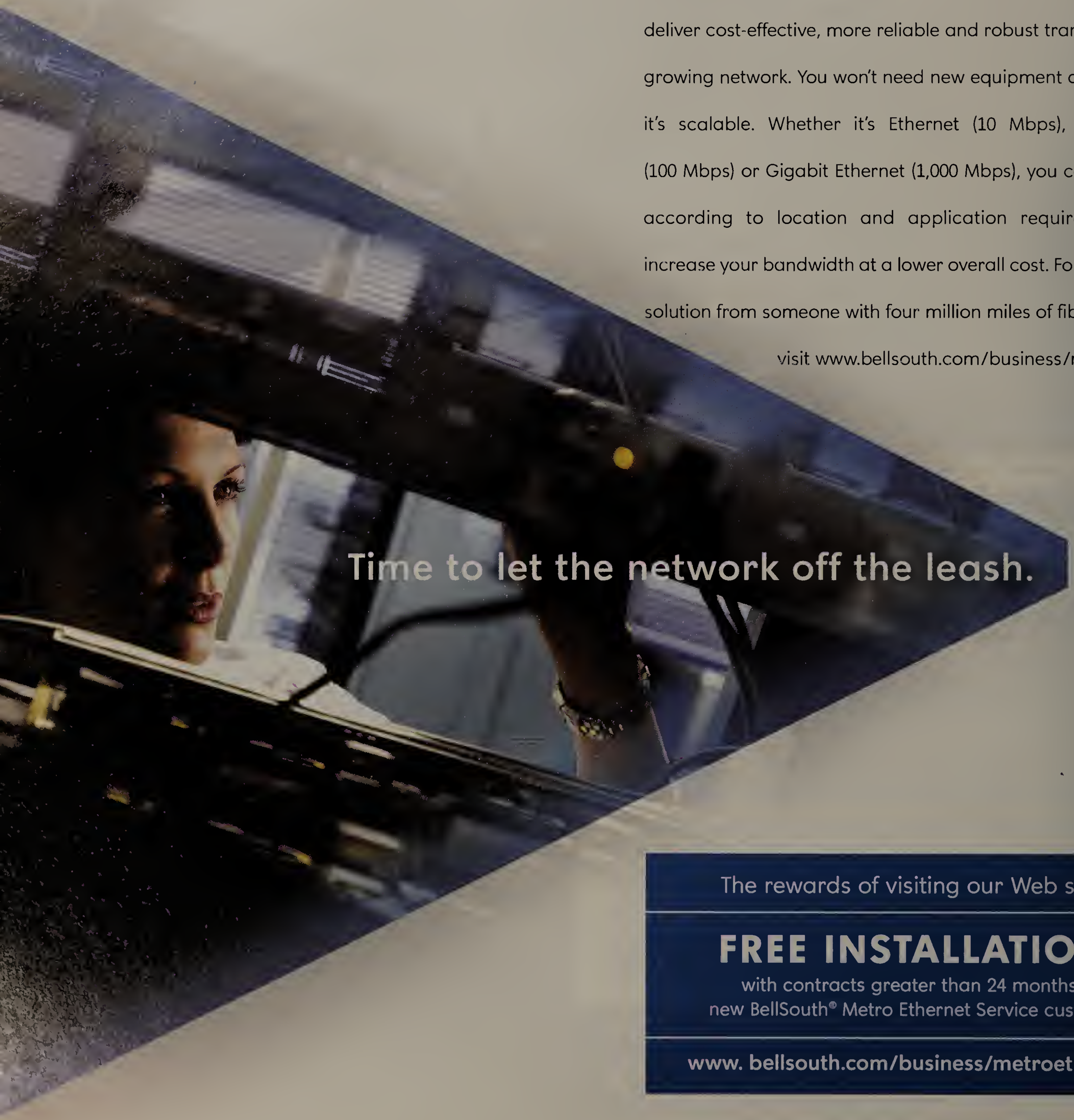
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UnitedLinux quietly marches on

■ BY JENNIFER MEARS

The UnitedLinux consortium — unveiled with much fanfare last year as a unified effort to create a standard Linux distribution — has been awfully quiet of late in an industry segment that has been anything but quiet.

That has market watchers questioning what the future holds for the group, formed in May 2002 by Conectiva, SuSE Linux, Turbolinux and Caldera (now The SCO Group). Many questions have centered on the $3 billion copyright infringement suit that SCO filed earlier this year against IBM and SCO's subsequent legal pursuit of all Linux distributions and even Linux users.

What's more, SCO executives in May said the company was suspending activities with UnitedLinux (although a member of the consortium says SCO continues to participate in UnitedLinux meetings).

"I think UnitedLinux is being very quiet right now, waiting for the issue between

See UnitedLinux, page 24

Linux, unite

It has been relatively quiet on the UnitedLinux consortium front of late, but members say that's because most of their work is done. Here's a look at the group's evolution.

UNITEDLINUX

2002

May
Caldera (now SCO), Conectiva, SuSE and Turbolinux announce the formation of UnitedLinux to create a standard, business-focused Linux distribution.

July
Group says that its upcoming distribution will support Itanium 2.

A closed beta is announced for members' partners only.

September
Paula Hunter, a founding officer and chairman of the Application Service Provider Industry Consortium, is named UnitedLinux's general manager.

UnitedLinux announces an open beta of its Linux distribution, and more than 15,000 copies are downloaded within a month.

November
HP and IBM sponsor an event at Comdex to announce the release of UnitedLinux 1.0.

2003

January
IBM and AMD join as the first technology partners of UnitedLinux; HP joins later in the month.
Separately, the group announces a carrier-grade service pack for UnitedLinux 1.0.

March
Oracle extends its Unbreakable Linux technology to UnitedLinux.

SuSE ships UnitedLinux-based SuSE Enterprise Server 8 with support for Itanium 2.

April
SCO ships UnitedLinux-based SCO Linux Server 4.0 with support for Itanium 2.

UnitedLinux 1.0 supports systems based on AMD's Opteron chip.

May
After calling UnitedLinux an important alternative to Red Hat when the group was formed, SCO CEO Darl McBride oversees a move by his company to suspend activities with the consortium and halt SCO's Linux distribution.

McBride

Short Takes

■ **Aruba Wireless Networks** has secured $20 million in additional venture funding, bringing to $29.5 million the total raised by the year-and-a-half-old wireless LAN switch maker. The company also named Dominic Orr, former head of Alteon WebSystems, as its executive chairman and named a CFO and vice president of worldwide sales and channel operations.

■ **Advanced Digital Information Corp.** last week announced an integrated disk-to-tape appliance that lets users determine how they will back up and archive data. The Pathlight VX is a combination disk- and tape-based array that uses Advanced Technology Attachment drives and LTO1 or LTO2 tape technology. Back-up software sees the device as a single tape library. The Pathlight VX has as much as 40 terabytes of storage capacity and fits in a standard 19-inch rack. The company plans to ship it next month starting at $190,000.

IP videoconferencing winning converts

■ BY LINDA LEUNG

According to an informal survey of 161 out of 500 attendees at the Polycom User Group show earlier this month, nearly half said their organizations use IP technology for videoconferencing.

Chris DiFiglia, PUG president and global video operations manager at Bear Stearns, says there has been an increased level of interest over the past year in IP conferencing among PUG members looking to upgrade from traditional ISDN-based videoconferencing. He estimates that at least half of new videoconferencing rollouts are for IP-based systems, a figure he says was probably less than 30% a year ago.

IP conferencing lets users offer real-time, multimedia voice, video and data conferencing over their existing IP networks, instead of having to lease and manage a dedicated ISDN network to do the job. According to a Wainhouse Research white paper, IP conferencing is more reliable than the typical 386K bit/sec ISDN videoconferencing call, which is dependent on six data channels working simultaneously, each of which carriers charge for on a per-minute basis.

DiFiglia adds: "IP is a much more fault-tolerant network. With ISDN, if there's a dropped frame or picture, the entire call is dropped. An IP world is more forgiving. The worst that would happen is that the video frame would freeze for a second."

According to Wainhouse, IP networks typically offer at least 10M bit/sec bandwidth to each video system, which means a standard IP video call might be placed at speeds of 512K bit/sec, resulting in better audio and video quality. Also, IP videoconferencing systems can be less expensive than ISDN-based systems because they do not need special ISDN-interface equipment and software. Companies can use common PCs as the basic processing engine for IP conferencing.

Polycom has offered IP videoconferencing since 1996 through its ViewStation line of group videoconferencing appliances. Wainhouse says Polycom's share of the group videoconferencing market in the second quarter was 51%, followed by archrival Tandberg with 21%.

Polycom says its base of videoconferencing equipment users is split 50-50 between ISDN and IP, and that 70% of new inquiries are for IP-based gear.

Goldman Sachs, a Polycom customer, is planning an evaluation of IP conferencing in the fourth quarter. If all goes well, the investment firm plans to roll out the technology next year at its six-building campus in New York followed by offices in London and Asia, with main deployment targeted for 2005 and 2006.

"A move to IP would give us productivity gains. We'd be able to reach decisions faster and improve communications," says Leo Brito, vice president of multimedia technology and services at Goldman Sachs.

Bear Stearns has used IP conferencing in its New York world headquarters for more than two years. Its national and international branch offices use a private ATM/frame relay-based network, but DiFiglia says they will be upgraded to IP when their existing network equipment needs to be replaced. The IP and ATM/frame relay networks are connected to a bridge, which lets the different systems communicate. ■

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TOLLY ON TECHNOLOGY

Kevin Tolly

Testing anti-spam products can be done

After worms, spam is easily the bane of existence for an increasing number of users — corporate and home alike. It is more than a full-time job to keep track of all the new spammer tricks.

Devising tests to probe anti-spam behavior is a daunting task — but that doesn't mean we shouldn't try.

At first blush, it seems like a hopeless endeavor. After all, with spammers expending significant effort to find ways around whatever barriers are put in place, by the time one test is developed there are sure to be new methods of spamming out "in the wild." Some say that because testing can never hope to mirror reality, no useful tests can be developed. I disagree.

We can apply concepts developed to test less-amorphous things — LAN switches for example — to provide a basis for useful evaluation of anti-spam. For starters, one could dismiss the last decade or so of switch/router testing for the "it-does-not-reflect-reality" reasons stated previously. Indeed, while we test these devices, usually with streams of same-size packets, nobody contends that this is how networks work in the wild.

We do it for two fundamental reasons. First and foremost, such testing provides a way to get direct points of comparison across products. While one could argue that comparing the results of tests that are "illogical" (that is, not real-world) is illogical, that is not the case. At its simplest, a test can show the raw processing capabilities of multiple devices — an important element. More importantly, the results can give key insights into the underlying architecture of the product and thus how it is likely to behave in the wild.

And this is where we can get the benefit with testing anti-spam solutions. With countless companies and countless underlying architectures and implementations, it becomes difficult to judge products on their own merits. By devising structured tests and applying them across products/services, key elements can be exposed.

We've done just this. For several reports that will be released soon, we devised a set of tests that exercised anti-spam products/services — and produced some interesting results.

Given the variety of spam that any product will have to handle, coupled with the various addressing attributes used by spammers, we knew that we'd be looking at using thousands of test messages. While logistically challenging, it does provide the benefit of delivering thousands of data points and thus more reliable results.

We started by "collecting" some thousands of examples of actual spam, loading them into a database and classifying them into categories based on the content. Among these we built a category of "benign" messages. These were real messages that should get through and not get snagged by the anti-spam product. Then we used a custom "spam-generator" program that we built to send these messages to the system under test using both original and "faked" FROM addresses and variations on TO, CC and BCC fields.

With this fundamental test, we saw significant differences in behavior. We even saw anti-spam offerings that, inexplicably, didn't filter out messages that had "ADV" (advertising flag) in the subject line. As expected we gained insights into the underlying product architectures — and performance — and proved to our satisfaction that testing spam is not a futile endeavor.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Manasquan, N.J. He can be reached at ktolly@tolly.com.

UnitedLinux

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IBM and The SCO Group to be settled," says Dan Kusnetzky, vice president of system software at IDC. "My sense is since the discussion of UnitedLinux has a tendency to bring up The SCO Group and all of the issues that The SCO Group has brought forward, the individual members of the group have spoken less and less about UnitedLinux. Although, behind the scenes they appear to be working together."

Joseph Eckert, a spokesman for SuSE, which did the bulk of the engineering work for the UnitedLinux distribution, says technical projects continue, although the majority of work has been completed. As a result, he says SCO's distancing itself from UnitedLinux is having little impact.

"Really, the UnitedLinux activities were sort of being curtailed anyway," he says, noting that a standardized Linux platform, UnitedLinux 1.0, was rolled out at Comdex last November, and certifications and partner support from vendors such as HP, IBM and Oracle followed.

"Now essentially the role of UnitedLinux is to continue to support the maintenance of [UnitedLinux 1.0], which is what we're doing, and to make sure certifications are up to date," Eckert says. "Most of those certifications and technology issues were handled by SuSE, anyway. That's the way the partnership was built."

When asked whether UnitedLinux ultimately would be dissolved, Eckert said only that it was "premature to speculate on that."

"The next product cycle probably brings us into the middle of next year, and we have until then to decide what's going to happen with UnitedLinux," he says.

Eckert says regardless of UnitedLinux's future, SuSE would evolve the UnitedLinux platform. Customers appear unfazed.

"As long as there is SuSE, we'll be fine," says Joe Poole, technical director at Boscov's Department Stores in Reading, Pa.

Boscov's uses SuSE Enterprise Server 8 in some instances and plans to move its z900 mainframe to the UnitedLinux-powered platform when it upgrades its WebSphere Commerce deployment later this year. Poole says the idea behind UnitedLinux is a good one.

"The architecture of the distributions today does not have to be the same, which can be confusing when multiple distributions are used in a single shop. It's also a nightmare for developers who would like to have their software install without a problem on any Linux system," he says. "If you have a version of UnitedLinux, most open source programs and commercial software should install with ease."

Poole says he hopes UnitedLinux will let the Linux community "avoid the trap that befell Unix."

"Every company had its own version [of Unix], and porting from one platform to another was a headache," he says. "The only question left regards Red Hat and what it intends to do."

The possibility of Red Hat joining UnitedLinux appears remote. Red Hat snubbed its nose at UnitedLinux when it was invited to join the consortium last year, and Gartner analysts doubted that the consortium would have any impact on the more than 50% market share that they expect Red Hat to retain through 2005.

Indeed, Red Hat continues to dominate the market and just last week introduced its open source architecture, which expands Red Hat's business beyond the operating system to include infrastructure software, such as application servers and systems management.

While some analysts say the underlying premise of UnitedLinux — that small vendors banding together can save money by combining efforts to create a technically sophisticated platform — remains sound, others say the future of the group will have little effect on the Linux market in general.

"To be very honest, UnitedLinux wasn't having much impact, anyway," says Bill Claybrook, an analyst at Aberdeen Group. "It needed to be bigger, and it needed to be more dynamically managed and run. I'm not saying it didn't accomplish anything, but what it accomplished was much less than what it set out to do." ■

Red Hat branches out

In a move to extend its business beyond the Linux operating system, Red Hat last week announced plans to deliver open source application server, clustering and systems management software.

The first part of the initiative is Red Hat Enterprise Linux 3, due out in October. The operating system will offer hooks to the other software, which will be delivered as additional subscriptions. Hardware support in the operating system has been expanded from Intel platforms to include IBM's zSeries mainframes and iSeries and pSeries PowerPC-based servers, as well as systems based on Advanced Micro Devices' 64-bit Opteron processor.

Red Hat's aim is to set a direction for the open source community to develop enterprise infrastructure components that it will then take and integrate with Red Hat Enterprise Linux. "Many of the issues with Linux in the enterprise have been the lack of interoperability among components," says Brian Stevens, vice president of operating system development at Red Hat. "We hope the same momentum behind the Linux community will drive the applications market."

Today, enterprise Linux users who want application server, clustering or management software typically look to proprietary products from vendors such as Veritas, BEA Systems or IBM. The Red Hat products will compete with those but aren't identical, says Paul Cormier, executive vice president of engineering. "Obviously the open source application server does not have the same features as a BEA or IBM application server," he says. "We are here to give customers the opportunity to have a complete open source solution. The strategy for us here is offering choice."

About three months after the Enterprise Linux 3 release, Red Hat plans to deliver clustering as the first add-on. The plan is to offer 16-node clustering for load balancing, fail-over and storage management, Stevens said. Within three months after that, Red Hat plans to offer a Java 2 Platform Enterprise Edition application server.

This product will be based on Java Open Application Server, from European middleware consortium ObjectWeb. Systems management software that allows provisioning, upgrading and monitoring of servers is due out in the same time frame as the application server. Pricing for the new offerings has yet to be determined.

— Joris Evers, IDG News Service

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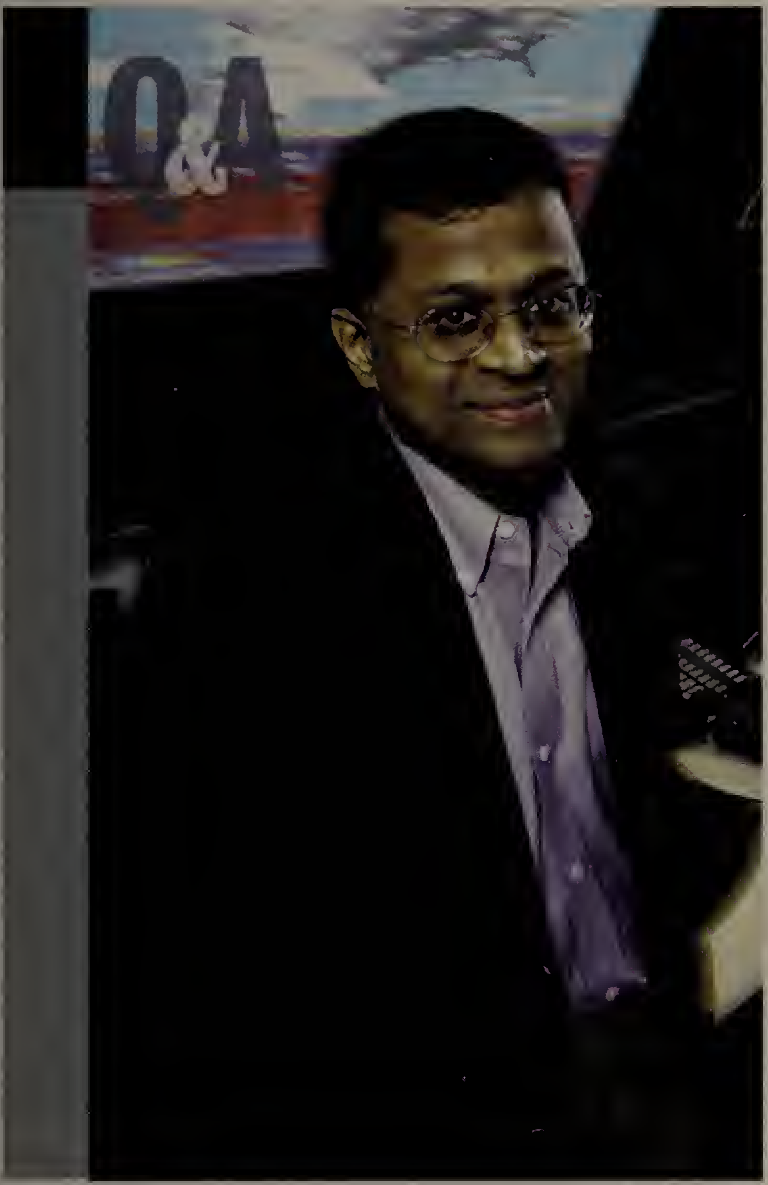

Pershing gets arms around online apps

Pershing has been around since the 1930s and runs one of the biggest financial clearing businesses in the U.S., but the company is little known to many people because it does so much of its work behind the scenes. Sold by Credit Suisse Group to Bank of New York for $2.1 billion earlier this year, Pershing relies heavily on its network to conduct much of its business, which involves supplying about 250 applications and services to more than 1,300 customers. Ramaswamy Nagappan, Pershing's managing director of e-services, spoke recently with Network World *Senior Writer Denise Dubie about the challenges of running such a huge online applications system.*

Your take
Network executives share their wisdom

Tell me about your network.

Our infrastructure is very widespread, from mainframes to Unix to NT [servers — of which there are about 500]. We're distributed across all the major vendors [on the software side, including Oracle and Sybase]. The internal network is all Ethernet, and we have a Gig backbone. From a customer point of view, we have ATM, frame relay, T-1 and point-to-point. We run Internet-based VPNs. We also have dark fiber and OC-3 [155M bit/sec links]. Primarily, we have three data centers.

What do you do day to day?

I am responsible for the development of applications and distribution of them. These include brokerage trading, account information, market data, news and other research information and content. The modes of access can be through a standard Web browser, telephone (voice recognition), wireless or through a native Windows application. Knowing the end-user experience is a key in delivering applications over the network. The applications need to be instrumented and integrated well into our enterprise monitoring and operations framework. This way we are alerted to problems before the customer calls to report them.

So what's your secret for keeping these applications up and running?

The primary thing we do is make sure we have dual data centers [while Pershing has three data centers, two are redundant], and both are hot sites. As for the applications, all the functions are running at both locations. It resembles a disaster recovery kind of situation. Even our development staff is in multiple locations.

Our software architecture and hardware infrastructure play a key role here. The software architecture incorporates features that support easy distribution of request processing to redundant software and hardware components; the hardware and network

See Pershing, page 28

Short Takes

Symantec is adding virus and worm reporting to the threat information that the security company already collects through its **DeepSight Threat Management System** service. The offering already features intrusion-detection alerts and firewall-related data, gleaned from 20,000 partners around the globe. DeepSight 5.0 starts at $15,000 per year for research reports containing the aggregate security-event data.

RSA Security has upgraded its **ClearTrust** server software for policy-based access to Web applications, adding support for Security Assertions Markup Language 1.1 and identity-management features licensed from Thor Technologies.

Vendors diversify content mgmt. tools

BY ANN BEDNARZ

This summer, content management vendors staged a slew of acquisitions and application overhauls as they sought to attract companies that need help managing multiple information sources.

The latest vendor to fine-tune its software is Stellent, which last week released a new version of its content management suite, rebuilt to provide a common platform for its multiple application modules.

The vendor released Stellent Content Management 7.0, which offers a common user interface and a single server and repository architecture for Stellent's five content-management application modules: document management, Web content management, collaboration, records management and digital asset management.

Version 7.0 also includes new built-in records management capabilities and enhanced document management, workflow and imaging functionality. Typical enterprise implementations cost $50,000 to $200,000; individual application modules start at $25,000.

Analysts say an integrated content management platform is critical for companies that need to manage diverse content types. Content management is changing from a stand-alone application into an infrastructure that needs to be tied to other key enterprise applications, according to Gartner. Some of those ancillary applications include portals and collaboration tools.

Customers are buying into the idea, analysts say. In a survey of 877 technology buyers, Forrester Research found that 32% of North American firms plan to buy content management technologies this year.

For their part, content vendors have worked to diversify their product lines, often through acquisition.

Earlier this month, content-management vendor Vignette announced plans to acquire Intraspect Software for $20 million. The buy will add collaboration software to Vignette's arsenal. Interwoven also is looking to add collaboration technology to its offerings by merging with iManage in a $171 million deal announced last month.

The search for integrated digital-asset management (DAM) features — for handling volumes of rich-media content such as images, audio and video — fueled two more recent acquisitions. In August, Stellent acquired the assets of DAM specialist Ancept for $2 million and 100,000 Stellent shares, and in June Interwoven bought MediaBin for an undisclosed amount.

Also this summer, Open Text announced plans to purchase German content management company Gauss Interprise for $11 million in stock. From Gauss, Open Text will gain Web content management, archiving and workflow. To fill its Web content gap, IBM in July bought out Web content management specialist Aptrix. ■

'NET INSIDER

Scott Bradner

Priorities: Greed before a functioning Internet

My hope and hopeful expectation is that by the time this column gets published common sense or the voice of authority will have won out over greed, and VeriSign will have stopped hijacking .com and .net. Even if my hopes are fulfilled, this episode has been an important lesson on the requirement to not trust the well being of the Internet to people who so easily put their greed in front of all other considerations.

I'll give a bit of background for those of you who have been too busy following the California recall-election debacle to pay attention to what's going on with the Internet. On Sept. 15, VeriSign — the operator of the .com and .net domain name registries — changed the data in its database so that whenever anyone looks up a domain name that did not exist, the IP address of a VeriSign server was returned instead of the server responding that the domain did not exist. VeriSign explained what it was doing in a white paper (see www.nwfusion.com, DocFinder: 7828).

To someone using a Web browser, the result of the changes VeriSign made might not be all that obvious. If you mistype a URL, you get a VeriSign Web page that lets you search for the site you were trying to reach. This is about the same thing that users of some browsers were already getting when they mistyped a URL, the difference being that the Web page is now a VeriSign one rather than one selected by the browser company.

But the Internet is more than just the Web. There are thousands of applications that also use the Internet with more or less user interaction. Now all of these applications will get redirected to the VeriSign server when there is a problem with the domain name. VeriSign only tried to deal with Web and e-mail traffic, and it dealt with e-mail in a way that broke a number of systems that try to eliminate spam. All other applications now mysteriously will fail with no notice to the users.

VeriSign's change set off a firestorm in Internet techie circles. There were more than 500 messages to the nanog list (DocFinder: 7829) on the topic in less than a week — almost all of which expressed strong views against VeriSign's actions.

Later in the week, the Internet Engineering Task Force's Internet Architecture Board and the Internet Corporation for Assigned Names and Numbers (the folk who are supposed to be overseeing the domain name system) weighed in with their views, also negative (See DocFinders: 7830 and 7831). Software updates already are being distributed to counteract VeriSign's changes.

One can reasonably ask how a change that affected so much of the Internet could be installed without any sort of advance discussion. VeriSign did it because it *could* — it controls the databases. Apparently the question of whether the company *should* do it never entered the minds of its officials. VeriSign felt it knew what was best for VeriSign — it has said that it hopes to make money redirecting the typos. What was best for the Internet was apparently irrelevant.

But one big lesson that must be learned from this episode is that organizations or people in positions of responsibility in the Internet infrastructure must be worthy of our trust. We now have a case study of what happens when this is not the case.

Disclaimer: Arrogance is not a stranger at Harvard but, even at Harvard, VeriSign would stand out. That said, the above is my own arrogant(?) view.

Bradner is a consultant with Harvard University's Information Systems. He can be reached at sob@sobco.com.

Pershing

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infrastructure in turn supports this distribution and replication strategy across and between data centers. It is still critical that applications are designed according to their usage patterns and that key architectural support is there to meet our performance requirements, for example caching and load balancing.

Do you throw bandwidth at your applications or lean more toward quality-of-service techniques?

We maintain a safe and conservative amount of free capacity, which is monitored continuously. Bandwidth is increased to achieve this margin. We use network QoS technology at the physical switching level to prioritize online processing traffic over automated data movements like FTP. We do not provide QoS at the application level at this time, and we have the ability in our architecture to apply routing constraints to software messages.

How closely does the application development staff work with the network group?

When we started years ago, the team was smaller and the culture brewed in such a way that the application development team always worked closely with the network people. In terms of our e-commerce delivery, if you look at external monitoring companies such as Keynote and Gomez and their measurements, we are the top in performance. The only reason that happened is because the developers work with the network very closely. We have gone to the extent of building routing agents that know which applications and which machines are running faster and feeding intelligence about which application or machine it should be load balancing to the Cisco distributor device. Even now we are working with the network team to figure out [QoS]-based routing. Both groups try to leverage existing infrastructure to get the economies of scale. In some cases, the network infrastructure must be modified to allow for the new functionality/connectivity. We now offer streaming content over our network.

What's your Web services strategy?

Web services form the essence of our customer integration strategy. We are migrating existing proprietary interfaces to open standards such as [Simple Object Access Protocol] and HTTP. This includes a diverse range of integration requirements, from document delivery to request-response interactions and alert notifications.

What affect will Web services have applications development?

Within our architecture, increased testing is the primary impact introduced by Web services. Our service-based architecture has implicit support for Web services, allowing services to be created that can be accessed via a number of protocols without substantial additional development effort. This will help us re-use a lot of these services to offer in different product flavors. Also, our customers will be able to integrate them into their proprietary products.

How do you prioritize security concerns?

Security is very high among our customers' concerns. Before they use our service, they actually have their security team come and audit us to make sure we are on par. We keep with industry standards in terms of all security levels. We try to get independent certification people to come in and certify us often. We have a dedicated team, starting with intrusion detection all the way up to application security.

What's your take on utility computing?

The vendors are a little bit late in terms of the application integration with infrastructure and management. We end up writing all the application instrumentation and linking it to tools such as OpenView, Smarts and Netcool. For example, with the idea of multiple data center implementations, a lot of customized work needs to be done. If you have the same application and you decided to run it on two different data centers and then let it load balance, there is nothing out of the box to do that. A lot of things need to be done. You need to understand the application. Then there's the network and the database — that is a lot of customization just to make sure your application is redundant 7 by 24. The vendors are on the right track with the idea and currently are saying that they will come with a team of people and do it for you. But that's an expensive and long process. ■

Getting personal

Ramaswamy Nagappan

Title:	Managing director of e-services
Organization:	Pershing
Responsibilities:	Reports to the CIO; oversees development of e-commerce applications; and ensures application delivery across Pershing and customer networks.
Annual IT budget:	Undisclosed
Previous jobs:	Fifteen years at Pershing; five years in IT consulting.
Background:	Bachelor's degree of engineering in electronics and communications from Anna University in Chennai, India.
Home network:	Wireless LAN, enabled and interactive in every room throughout his home.
Last good management book read:	Tom Peters' *The Circle of Innovation*

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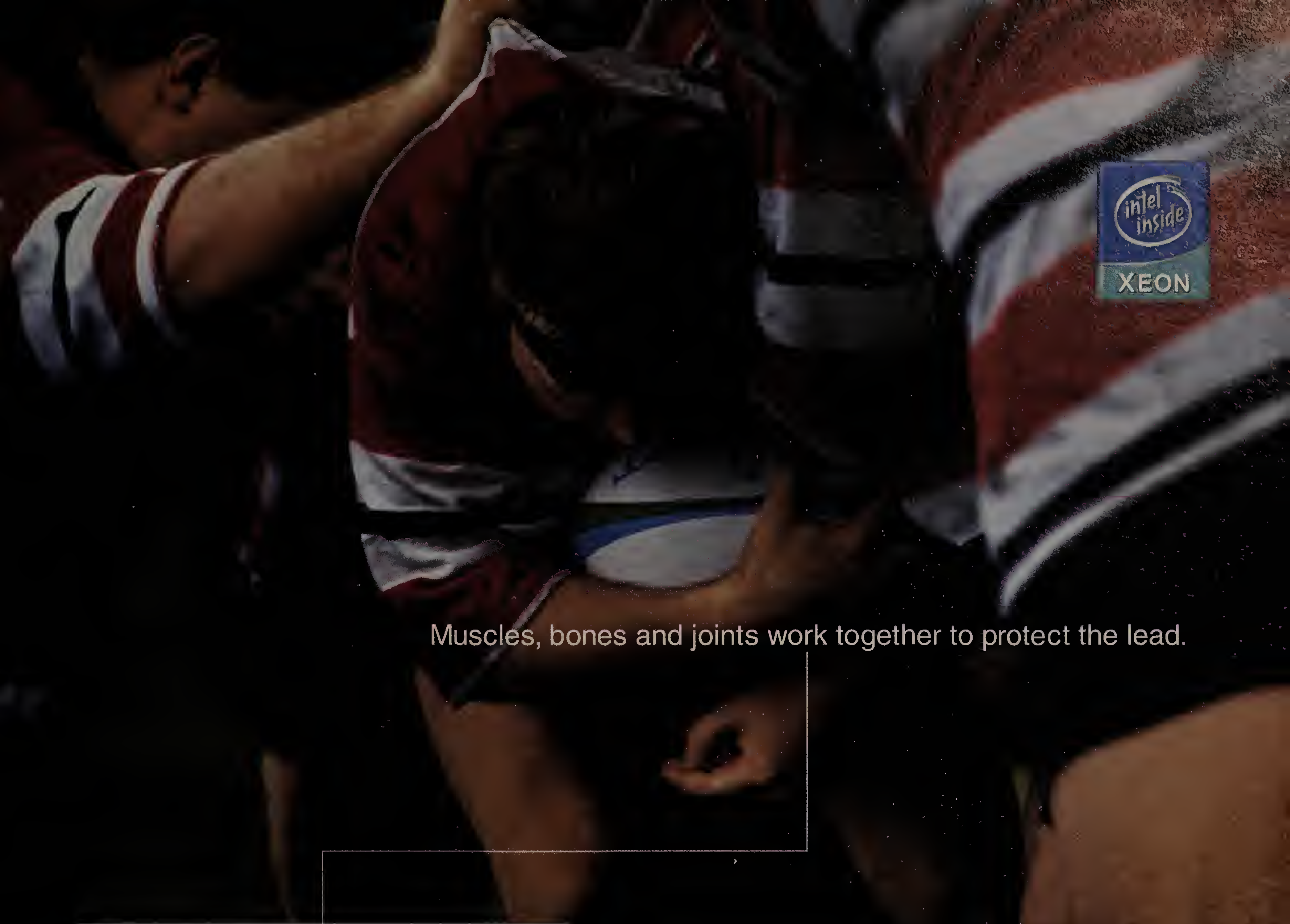
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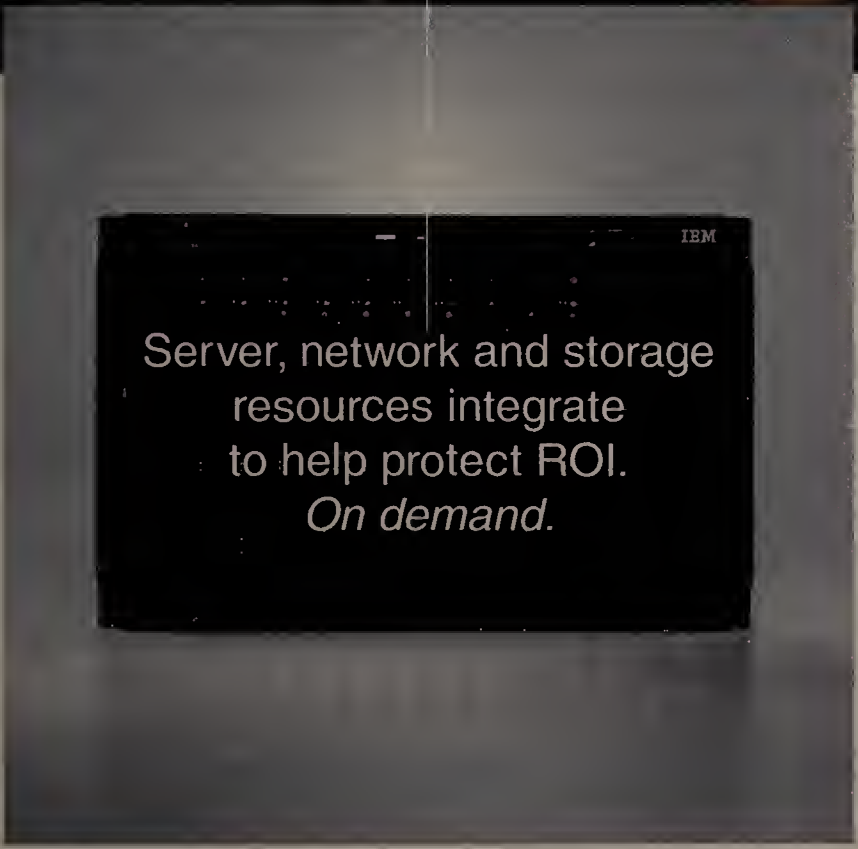
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DSL Forum targets business services

■ **BY DENISE PAPPALARDO**

Quality of service, bandwidth on demand and flexibility are not terms that generally are considered synonymous with DSL service, but they might be in the near future.

Earlier this month the DSL Forum accepted a technical report, TR-059, that outlines a new IP-centric architecture aimed at making DSL an ironclad data communication choice for business users.

"The biggest benefits for business users will be QoS ... and burstable bandwidth," says Daniel Briere, CEO of TeleChoice. But the industry must take several steps before users realize these benefits.

Vendors including Copper Mountain, Juniper and Redback Networks already are upgrading their broadband remote-access servers (BRAS, pronounced bee-razz) to support the new architectural requirements.

TeleChoice estimates service providers will spend $810 million on new BRAS equipment over the next two years to support most or all aspects of TR-059.

BRASs still will be used as a broadband aggregator and subscriber manager, but according to TR-059, the next generation of BRAS also will support billing processes, bandwidth management and QoS for each subscriber.

The new BRAS gear will let service providers provision connections at Layer 3 using PPP Termination and Aggregation instead of at Layer 2 using Layer 2 Tunneling Protocol or ATM, says Tom Anschutz, principal member of BellSouth's science and technology organization and one of the authors of TR-059.

This shift to the network layer, Layer 3, provides more flexibility for users and service providers, Anschutz says. Currently, DSL is fixed, in that each line can support only one connection. Moving to Layer 3 will let carriers provision a DSL connection that can connect to the Internet, a VPN and eventually to specific Web applications such as videoconferencing.

Future of DSL

The DSL Forum approved two specifications that promote a new IP-centric architecture that promises:

- Dynamic quality of service.
- Bandwidth on demand.
- Multicast and real-time service delivery.
- Improved network utilization.
- Improved traffic management.
- New service options.
- Possible cost savings.

Many carriers are expected to upgrade their BRAS equipment or deploy new servers early next year, with service enhancements to follow, Briere says. "We're already seeing RFPs" from companies such as SBC Communications, he says.

Once a carrier has deployed next-generation BRAS gear, the next logical step would be to set up the QoS features. The forum is proposing using the Internet Engineering Task Force's Differentiated Services (Diff-Serv) to support QoS. Diff-Serv uses code points to identify the priority level of individual packets that traverse the network.

"Service providers will be able to offer business-class services with [service-level agreements] that can support mission-critical VPNs. They can't offer these services today, which is a real shortcoming of DSL," says Pat Hurley, an analyst at TeleChoice.

The forum outlines three levels of service that it will support initially, including

See DSL Forum, page 32

Short Takes

■ **AT&T** last week signed a three-year, $3.6 million contract with **Northwestern Human Services.** The Mid-Atlantic mental health, juvenile and adult services organization is consolidating its hodgepodge network-service approach. Northwestern, which employees 6,500 people in Pennsylvania, New Jersey, Washington, D.C., and Virginia, worked with nearly two dozen service providers before moving all its local, long-distance, Internet and data traffic to AT&T's network.

■ The U.S. government has approved **Singapore Technologies Telemedia's** plan to buy a 61.5% stake in **Global Crossing.** Singapore Technologies is paying $250 million for the bankrupt carrier. Global Crossing filed for Chapter 11 bankruptcy protection in January 2002. The deal was under scrutiny because Global Crossing carries some U.S. federal government traffic and the Singapore government controls Singapore Technologies. But despite reported U.S. Department of Defense concerns, the Committee for Foreign Investment in the U.S. approved the deal.

AT&T developing early warning tool

■ **BY CAROLYN DUFFY MARSAN**

AT&T Labs is developing a new kind of traffic analysis tool — dubbed Internet Protect — that is designed to provide corporate customers with earlier indications of network attacks.

Although Internet Protect is being kept under wraps, AT&T confirmed that it is conducting an early test of this tool with several large corporations. With Internet Protect, AT&T has set up a special Web portal to provide a steady stream of information about anything out of the ordinary that AT&T's network operators see, particularly on the Internet.

"Worms don't always fire off and work perfectly. We see all the test attempts. We see the fizzled versions of stuff in advance," says Ed Amoroso, chief information security officer at AT&T. "We're trying to change the nature of our relationship with customers so when we see ... indicators of something that fizzled, we tell everybody."

AT&T officials would not say when Internet Protect will be commercially available or whether it would be offered under the Internet Protect brand. But they did say it would be complementary to intrusion-detection systems.

"We're trying to take this internal technology and extend it to CIOs in the enterprise .... It's a technology that's very promising," Amoroso says.

Internet Protect is part of a larger initiative across AT&T Labs to improve the security and reliability of AT&T's increasingly IP-based network infrastructure.

"Network attacks are clearly on the rise," says Hossein Eslambolchi, AT&T CTO, CIO and president of AT&T Labs in a recent conference call with the media. "We have seen more attacks in the last six months than we've seen in the last 10 years."

Eslambolchi says security is one of six strategic areas of research for AT&T Labs.

"We are looking at innovations" related to network-based security, Eslambolchi says. "We need a lot better ways to do forensic analysis of viruses and worms."

As an example, Eslambolchi points to the MS-SQL Slammer worm, which was reported on the Internet in January. AT&T saw anomalies in its network three to four weeks before that worm hit and was able to take certain precautions. "When the worm actually happened, AT&T's network did not take a hit," Eslambolchi said.

Amoroso says the rise in network attacks AT&T is seeing can be attributed to the growing number of vulnerabilities in commercial operating systems and applications that can be exploited easily by writing worms.

"Network security has become a process of hunting down the latest and greatest information on vulnerabilities and trying to patch like crazy to beat the worms," Amoroso says.

With Internet Protect, AT&T will use internally developed traffic analysis tools to look for anomalies such as traffic spikes, traffic drop-offs and unusual protocols in use.

"We do [traffic analysis] better than anybody," Amoroso says. "By traffic analysis, I mean pulling information from the network such as statistics and routing information.... It turns out that building security tools around traffic analysis is as good a theme as any."

Amoroso uses the analogy of highways and truck bombs to explain Internet Protect.

"As highway people, we say [focus on] delivering all the traffic.... But that's a bittersweet victory if what we're delivering is the equivalent of truck bombs," he says. "Maybe there's something we could do on the highway to filter out the truck bombs." ■

EYE ON THE CARRIERS

Johna Till Johnson

RBOCs stand tall against recording industry

I usually don't say nice things about telcos. And I almost never say nice things about their lawyers. But here I'll do both: Kudos to the lawyers at Verizon and SBC for opposing the Recording Industry Association of America's request that the telcos compromise the privacy of their customers. Way to go, guys.

Here's the deal: the RIAA has asked the regional Bell operating companies, including Verizon and SBC, to monitor customers' usage of their DSL services and report downloads of copyrighted material. To their everlasting credit, the telcos have refused to comply and are fighting the RIAA in federal court.

"The recording industry is essentially granting itself more power than law enforcement has under the Patriot Act," Sara Deutsch, Verizon vice president and associate general counsel, said in one report.

The RIAA doesn't believe that civil rights are the issue.

"[The phone companies' position] doesn't pass the laugh test or the smell test," Matt Oppenheim, RIAA senior vice president of legal affairs reportedly says.

With all due respect, Mr. Oppenheim, that's horsepucky.

The former RBOCs have a long and distinguished track record of protecting their customers' privacy, even at the expense of the telcos' own interests. I worked with RBOCs in the mid-'90s on the development of quality of service that would have required IP packet inspection. RBOC executives ultimately rejected these services because they conflicted with customer privacy.

What doesn't pass the smell test is the RIAA's own position with respect to copyright enforcement. Ultimately, its approach is outdated, impractical and Orwellian — and benefits neither the artists whose interests the RIAA supposedly represents, nor the fans whose dollars fuel the entire music industry.

Don't get me wrong: I believe in copyright protection. Artists, software developers and other content creators have the right to be compensated for their efforts and deserve protection of their intellectual property.

But that's not what the RIAA is really fighting for. The RIAA acts on behalf of record companies, not artists. And record companies are fundamentally distributors and promoters — not creators — of content.

What's going on is that the Internet has dramatically cut the costs and enhanced the efficiency of distribution and promotion mechanisms, in the process is making obsolete many of the core business processes of record companies. In other words, record company executives are in approximately the same position that manufacturing workers were in during the '80s and '90s: Their jobs have been made redundant by technology.

The real reason the RIAA is attempting to force telcos to drag their customers into court is to protect the jobs of record executives, not the rights of artists, who benefit from less expensive and more effective distribution mechanisms.

What the RIAA needs to do is wake up and develop cost-effective distribution and promotion models that serve fans and artists well. If it can't, the organization should be replaced by one that does.

Regardless, kudos to Verizon and SBC for standing up to the RIAA's encroachment of our civil rights.

Johnson is president and chief research officer at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

DSL Forum

continued from page 31

assured forwarding, expedited forwarding and best effort, which respectively represent first-, second- and third-class offerings. TR-059 does not lie out the parameters for each level of service, but Anschutz says the forum is flushing out those definitions in separate, but related working groups. This will let a business set specific performance levels for all of its teleworkers accessing the corporate VPN using DSL.

DiffServ also will be used to guarantee priority levels to specific content on the application service provider (ASP) network.

TR-059 describes this ASP network as a source of content for service providers and their customers. This coalition of content providers does not exist today, and represents one of the more difficult steps for service providers adopting the TR-059 architecture, Anschutz says.

Essentially, the ASP network will be a collection of content providers in the gaming, videoconferencing or business-application arenas. The easy part will be to establish network connections with these companies, Anschutz says. But forging relationships with application-oriented companies is a different challenge for these DSL providers, he says. The DSL providers will need to establish agreements that spell out everything from settlement and billing to who is responsible for maintaining service levels.

But Briere says that application providers such as WebEx Communications, which provides Web-based conferencing services, want to forge such relationships to drive usage and therefore service revenue.

A DSL customer's connection to the ASP network is expected to also offer users more bandwidth flexibility. Burstable bandwidth is not available from DSL providers, but likely would become a standard feature, especially for business DSL services. For example, this would let a user who is downloading a training manual speed up the process by maxing out his 1.5M bit/sec DSL connection. Once the download is complete, the user's connection returns to a standard bandwidth designation.

While the new QoS features and bandwidth flexibility likely will mean higher prices, DSL becomes a realistic choice for businesses that might want to ditch more expensive low-speed frame relay services, Hurley says. ■

SHARP.

Digital Document Security and IT: Everything you need to know.

Q: What are the most significant digital copier security issues?

A: Various copier print controllers are actually servers that queue and permanently store multiple document files, providing administrator access to the documents. At a minimum, most digital copiers retain the last document processed; some even retain multiple documents totaling hundreds of pages. Others redirect print jobs when the printer is busy or jammed, making "denial of service" attacks possible.

Q: How does Sharp protect the network interface?

A: The Sharp Ethernet card allows administrators to restrict access and disable unnecessary protocols. With this network card, the Sharp digital copier is essentially protected by its own firewall.

Q: How can you be sure that security products actually perform as claimed?

A: The Common Criteria program—administered by the U.S. National Security Agency and the National Institute of Standards and Technology—evaluates security solutions. Products that are validated under the program meet security levels consistent with ISO 15408 methodology.

Q: How can Sharp improve IT security?

A: Sharp offers print privacy solutions designed to restrict unauthorized personnel from seeing confidential materials. Copier access can be controlled and monitored, while documents retained in printer/copier/scanner/fax memory are immediately cleared to eliminate unauthorized access.

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3Com's modular lineup of wireless access points and all-purpose PC Cards support any mix of WLAN and security standards.

Even though wireless LANs have been available for years now, many enterprises have shied away from major implementations for a number of reasons, including concerns about standards, security, scalability and management. Nobody wants to get stuck with technology that becomes obsolete as new generations emerge or that opens the door to intruders.

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MODULAR SOLUTIONS

With 3Com's modular approach, users can support any mix of wireless standards (see table). 3Com offers three base models of access points: the 3Com Wireless LAN Access Point 8200 includes an 802.11b radio, while the model 8500 includes an 802.11a radio and the 8700 includes both types of radios. 3Com also offers upgrade kits that allow users to add any type of radio – 802.11a, 11b or 11g – to any of the modular access points. That means users can employ any type of access point and be assured they could later buy an upgrade kit to address future requirements.

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3Com wireless LAN access points and 11a/b/g Wireless PC Card with patented XJACK antenna give customers the ultimate in flexibility along with performance, security and management.

SECURE, RELIABLE AND FAST

3Com likewise supports a suite of security standards, enabling customers to match the level of security to their specific requirements. To protect against unauthorized network access, the PC Card and access points support WiFi Protected Access (WPA), the next-generation WiFi security standard, 802.1x authentication with RADIUS server authentication support using MD5 and the Extensible Authentication Protocol (EAP), including EAP-TLS, PEAP and EAP-TTLS.

To protect data in transit, 3Com supports a number of encryption algorithms, including 128-bit Advanced Encryption Standard, and Wireless Equivalent Privacy (WEP) RC4 40/64-bit, 128-bit and 154-bit shared-key encryption.

To ensure good performance, 3Com access points and PC Cards include features such as autonomous load balancing, ensuring users always connect to the access point that offers fastest throughput, and dynamic rate shifting, which adjusts connection speed to changing traffic and environmental conditions.

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>
> **Vijay Dandapani**, chief operating officer, Apple Core Hotels.

Like many other 3Com products, the access points support Power over Ethernet, enabling the same Category 5 cable that connects the access point to the network to supply its power. That simplifies installation and offers more choices in mounting options.

Naturally, 3Com access points and PC Cards support the top speeds allowed by each wireless standard – up to 54 Mbps for 802.11a and 802.11g, or 108 Mbps in turbo mode, which combines the throughput of two channels.

MAKING WIRELESS MANAGEABLE

Using the Wireless LAN Manager, administrators can create profiles with the specific wireless LAN settings that each user requires, depending on where they need to connect from. As users change location, they merely click on an icon for the new location to configure the card.

3Com also supports management standards including SNMP, enabling a 3Com wireless network to be managed alongside a wired network from platforms including the 3Com Network Supervisor and HP OpenView. Using an embedded Web server browser, customers can configure parameters, run diagnostics and monitor performance of the wireless LAN from anywhere on the network.

The 3Com wireless LAN story is all about freedom of choice. Whether it's choosing the wireless LAN standard that best fits your environment now – knowing you can upgrade if requirements change – or the mix of authentication protocols and encryption standards, even the management platform, 3Com offers options to match most any enterprise requirement. In short, 3Com has eliminated the roadblocks to widespread enterprise wireless LAN deployments.

WLAN Standards at a Glance

Standard	Speed	Range (meters)	Frequency	Compatible Standard	Comments
802.11a	54 Mbps, or 108 Mbps in turbo mode	50	5 GHz	None	Operates on a low-interference channel, but with limited coverage. Good for customers with dense user base.
802.11b	11 Mbps	100	2.4 GHz	802.11g	The most widely deployed wireless standard, 802.11b has a high degree of multivendor interoperability but operates in the crowded 2.4GHz spectrum and has a relatively slow top speed.
802.11g	54 Mbps, or 108 Mbps in turbo mode	100	2.4 GHz	802.11b	Higher speed, but still compatible with the millions of installed 802.11b products. Faces same spectrum issues as 802.11b.

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Ramping up remote access for all

Two insurance firms turn to SSL VPN to extend secure access to tens of thousands.

■ **BY TONI KISTNER**

Like many global companies, Sentry Insurance and risk-management broker Willis use IP Security VPNs to provide IT people and power users with remote access to corporate resources. But with tens of thousands of users at both firms, they find the pressure is mounting to provide remote access to everyone else.

While scaling up their existing Cisco and Check Point VPNs is an option, both companies found the cost and complexity unattractive. What these and countless other firms need is an easy and affordable way to provide access to corporate Web mail, or oftentimes just a single application.

Both companies looked to Secure Sockets Layer (SSL) VPNs, which are easier to scale and deploy.

"Instead of giving users a thick VPN client, we just point them at a URL," says Eliot Irons, Sentry's information security manager. "The insurance industry is highly regulated, and there's a very high awareness of keeping our customers' data safe. I'm trying to give everybody peace of mind."

Irons and Mark Brunette, global information security officer at Willis, selected the SSL VPN they found the most secure, Whale Communications' e-Gap Appliance.

Today, 1,500 Sentry employees and about 20,000 customers — including independent agents and other firms — use e-Gap to access claims databases via a 3720 terminal-emulation program, company intranets, Web Outlook and Sentry's 401 (k) program portal. Sentry's agents work from home and other remote locations, and must use two-factor authentication to access the network.

Whale's e-Gap Remote Access device uses application-level filtering to check inbound data for unusual requests and those not defined within the scope of the permitted SSL VPN session. But most notable is Whale's Air Gap hardware platform. The box includes three integrated components: the external e-Gap server, the Air Gap switch and the internal e-Gap server. Each server includes a single-board computer. When the external server receives inbound requests, it strips off any networking information and loads encrypted data onto the Air Gap switch. This component has a memory bank and high-speed analog switch. When it receives data, it disconnects from the external server, switches sides, connects to the internal server and passes along the request.

Irons chose Whale quickly because he was familiar with Air Gap technology from his days as a security officer in the U.S. military, where the technology originated. At Sentry's annual security assessment, the outside firm that tested his network perimeter was impressed. "At first they didn't know what we had," Irons says. "Once they figured it out, they gave us a really high mark."

When Brunette came to Willis two years ago, he found the company's iNotes server — which served 55 users in one business unit at the time — sitting in the network demilitarized zone.

Short Takes

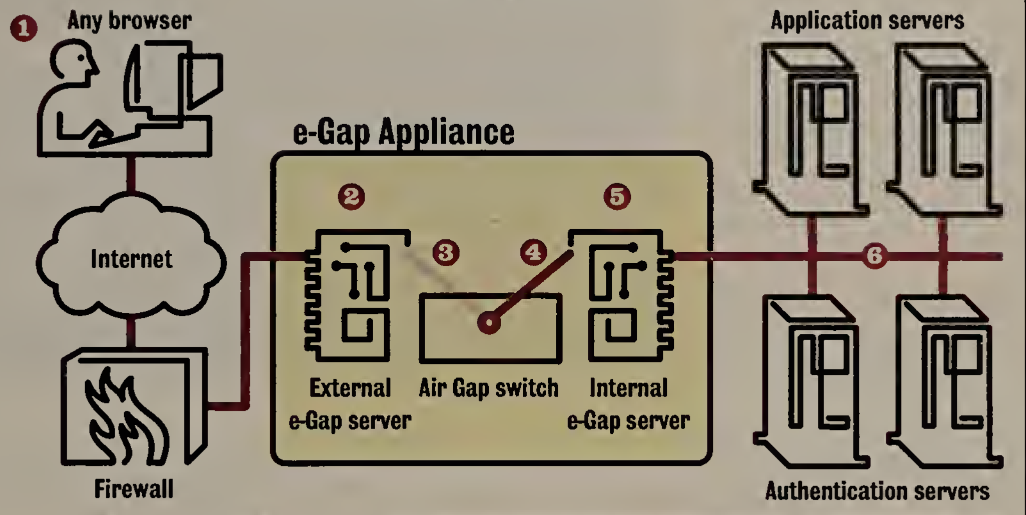
■ **IBM** and **Research in Motion** recently announced plans to integrate IBM's WebSphere Everyplace Access mobile middleware with RIM's BlackBerry Enterprise Server. Adding IBM's enterprise application access tool to BlackBerry Mobile Data Service and Wireless Platform would give users of salesforce-automation applications the ability to access request prices, enter orders, determine available inventory and the like. Field service groups can have sales reports and service requests pushed out to them.

■ Within four years, **smart phones** will be commonplace and camera phones ubiquitous, according to a new report from In-Stat/MDR called "Market for Smartphones and Camera Phones Heats Up." In the first quarter of 2003, 1.7 million smart phones and 7.8 million camera phones were sold, and In-Stat predicts a compound annual growth rate of 94.5% and 53.2%, respectively, through 2007. But high prices, technical glitches, bulkiness and inadequate network capacity plague smart phones, and camera phones need better image sensors, more onboard memory, longer battery life and network improvements, the report says.

■ **HOW IT WORKS**

Whale SSL VPN

Whale Communications' e-Gap Appliance provides Web remote access to internal corporate resources without directly connecting to a network.



① Employee types URL into a Web browser to access corporate network.

② The request is received by the external e-Gap server, one of three components making up the e-Gap Appliance. The server terminates the TCP/IP connection.

③ Raw payload is fetched by the Air Gap switch (a memory bank and high-speed analog switch), which then disconnects from external server.

④ The Air Gap switch then connects to the internal e-Gap server. Data flows between the external e-Gap server and internal e-Gap server at 100M bit/sec.

⑤ Internal e-Gap server hosts the remote access portal. In addition, all security intelligence including SSL encryption key, user authentication and authorization and detailed URL inspection reside on the internal e-Gap server.

⑥ Application and authentication servers communicate with internal e-Gap server to respond to valid user requests.

"The IT people didn't stop to think that our mail files were potentially accessible via the Internet," Brunette says. "They said it was the easiest way."

Willis gave Brunette the authority and budget to increase security, so Brunette added e-Gap Appliance and moved the iNotes server to the internal network. Now to access e-mail, users log on to a Web page and give their credentials and SecurID, and e-Gap Appliance makes the call to the internal network.

"While it's recommended security practice that you never call from a less secure to a more secure network, you can with Whale because the outside box doesn't really call inside," he says.

Whale also heightens security on the client side. Its Attachment Wiper clears all temp files, browser cache, downloaded files and pages, cookies, history data, user credentials and any other data trace left by a user while accessing corporate resources via a Web browser. E-Gap's Secure Logoff technology replaces HTTP Basic Authentication to ensure the user's credentials are never cached at the client machine. Timeouts must be implemented to ensure user sessions don't stay live indefinitely, and users must re-authenticate periodically.

So far, Brunette has put 4,000 users on the iNotes server in North America; his next challenge is figuring out the best way to extend access to Willis' international offices, which currently are served by slow and expensive dial-up accounts. Because Willis' mail infrastructure is distributed, the company has mail servers in many of its remote offices. While international users could access their mail by going through the single e-Gap Appliance in Nashville, bandwidth constraints in some overseas offices make that approach too slow. Instead, he and his team are considering centralizing mail, selecting some hubs, and putting mail servers with iNotes and e-Gap Appliances at each server. Another option is to increase the bandwidth and have overseas users access their mail via the single e-Gap appliance in Nashville.

"Right now, we're profiling our users: What do they need, just mail or access to back-end databases too? Once we figure that out, we'll take our next step," he says. ■

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■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Spyware removal tools stop snoopers

■ **BY RICHARD KOONTZ**

Each day companies are faced with increasingly sophisticated attacks on privacy and security that evade traditional firewalls and are immune to anti-virus technology. The most threatening and rapidly growing attacks come in the form of spyware. Spyware is any software surreptitiously installed on a system that can monitor and record aspects of the system and broadcast this information back to a third party.

Staying one step ahead of spyware creators requires a dedicated removal tool. Anti-spyware utilities are pattern-based, adaptive programs that scan systems to find and remove Trojans, key loggers, dialers, adware and cookies.

In many ways anti-spyware tools look like anti-virus software in a network. They use clients, an anti-spyware server and an administration console. Because spyware changes on a daily basis, automatic spyware-definition updates from vendors are critical. Updates are pulled from an anti-spyware server via the Internet and pushed to clients using a centralized control panel.

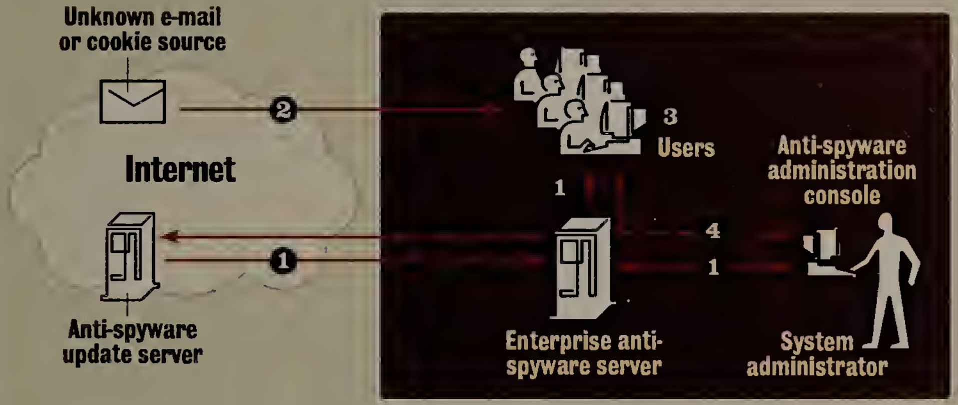
The most sophisticated anti-spyware vendor research labs will generate long lists of characteristics that tell users what spyware resides on a machine, where it is located and what it is doing. Anti-spyware programs rely on these characteristics lists and use them to remove Windows registry entries, individual files and, in some cases, entire spyware directories from a hard drive.

Spyware generally installs an executable along with other files in various locations throughout an operating system. These files are called spyware traces. Removing spyware without a dedicated anti-spyware tool leaves a trace. Moreover, elementary spyware-removal utilities simply remove the traces, which might stop the symptoms but don't get to the root of the problem.

■ **HOW IT WORKS**

Anti-spyware utilities

Spyware-removal tools purge Windows registry entries, individual files and entire directories on a hard drive.


Unknown e-mail or cookie source
②
Internet
①
Anti-spyware update server
3
Users
1
Anti-spyware administration console
4
1
Enterprise anti-spyware server
System administrator

① System administrator automatically gets the latest anti-spyware definition file from the anti-spyware server via the Internet. He pushes it to users whose PCs are running the anti-spyware client.

② User unknowingly gets spyware installed via e-mail or cookie from a Web site.

③ The anti-spyware client performs its scheduled sweep, finds the spyware and disables it.

④ Administration console alerts system administrator of disabled spyware.

But unlike typical viruses, not all spyware should be automatically removed. As such, administrators need to define user profiles based on programs their users need.

For example, RemEye is a console application that installs a WinVNC server. It is often employed as an easy-to-use installer and can be a good administration tool. But because it installs with a default password of "abcd," it also makes an excellent Trojan horse. Many pieces of spyware also are linked to legitimate applications and are required for those applications to function.

Sophisticated anti-spyware tools will not only find all trace files associated with a spy, but also offer a comprehensive database of spyware descriptions detailing the characteristics and threat-level associated with each spy found. An up-to-date database is essential to help administrators develop anti-spyware user profiles.

Once user profiles have been created, removing spyware is a straightforward process. In a typical removal scenario, a client is infected with a piece of spyware, and once a scheduled scan is run, the anti-spyware application finds and quarantines (disables) the spy based on the user profile. At this point, the spy can be permanently removed or reinstalled.

Spyware is changing on a weekly and sometimes even daily basis. Some types of spyware now can shoot back when fired on in an attempt to remove anti-spyware utilities. In other cases, spyware changes names and jump from one location to another when it realizes it has been detected and is about to be destroyed.

As a result, the anti-spyware strategies that worked yesterday might not work tomorrow. The rapid metamorphosis points to the need for an automated update system, as well as a dedicated anti-spyware program that has the ability to adapt as it encounters new spyware patterns.

However IT professionals choose to address the issue, spyware in corporate environments pose a significant threat to worker productivity, and network and data security. Anti-spyware protection can augment corporate privacy and security efforts, and is becoming a necessary part of doing business in today's Internet-enabled world.

Koontz is vice president of software development for Webroot Software. He can be reached at rkoontz@webroot.com.

Got great ideas

■ *Network World* is looking for great ideas for future Tech Updates. If you want to contribute a primer on a specific technology, standard or protocol, contact Amy Schurr, senior managing editor, features (aschurr@nww.com).

Ask Dr. Internet

By Steve Blass

To learn more about keeping our network from being compromised, we subscribed to a security mailing list. We have read about the Snort intrusion-detection system. Can we run it on a Windows system and use it to monitor the network?

Yes, Snort can run on a Windows system. The Snort home page (www.snort.org) even lets you download a pre-compiled Windows version (details at www.nwfusion.com, DocFinder: 7835) so you don't have to compile the program from source code. You should also get a copy of the Snort Users Manual and a copy of the Windows Guide, which explains the need to install a packet capture driver before installing Snort. You can use winpcap (go to DocFinder: 7836) or packet2k (http://SecurityFocus.net) to do this.

Snort operates in three modes. You can use it as a sniffer that displays all network traffic on your screen, and as a packet logger, which writes copies of the packets to a file on your disk drive. The third way, network intrusion detection, is covered in the user manual. In this mode, Snort uses a rules file (snort.conf) to decide which packets represent intrusion attempts. Writing Snort rules is explained in detail on the snort.org Web site.

Blass, a network architect at Change@Work in Houston, can be reached at drinternet@changeatwork.com.

A Bayesian filter that nabs 99.75% of spam?

GEARHEAD
INSIDE THE NETWORK MACHINE
Mark Gibbs

We suspect that you had more than enough mathematics in the form of Bayes Theorem last week so this week we'll explain how it's used in what is called Bayesian filtering to remove spam (note that the same techniques also can be used for general text filtering).

One of the best and most accessible descriptions of Bayesian filtering is an article from August 2002 titled "A Plan for Spam" by Paul Graham (see details at www.nwfusion.com, DocFinder: 7838).

The background to this work was an attempt to build a spam-proof Web-based mail reader written in a version of Lisp called Arc that Graham and his colleagues were developing (we have no idea what happened to this project).

Upfront Graham says that using the filter "we now miss less than 5 per 1,000 spams, with 0 false positives." Sounds good, and the amazing thing about the filter is that it really isn't that complicated. Actually, if you read Graham's first and second papers you'll see he added features to the second version that improved performance considerably.

To create the filter, sample sets of spam and non-spam mail were analyzed by breaking the text into tokens. Tokens are created from the text of a message using a few simple rules: Case is preserved; exclamation marks are retained; periods and commas are retained if they occur between two digits (to allow IP addresses and prices to be included); price ranges are recognized (such as $20 to $25) and turned into two separate tokens (for example, $20 and $25); and tokens that occur within header fields such as To:, From: and Subject:, or within URLs are prefaced with an identifier to let them be weighted separately from a body token (for example, "Enlargement" in the Subject: becomes "Subject*Enlargement" — the asterisk can be any character that is ignored in messages).

The frequency of all tokens in each set is counted, and Bayes Theorem is applied to derive another table of the probabilities associated with each token being used in a spam or a non-spam message. It is worth noting that Graham weights the non-spam tokens twice as heavily as spam tokens to minimize false positives — the extra weight actually makes the filter less sensitive to spam but safer for non-spam (on the other hand, the success Graham claims makes the decreased sensitivity irrelevant).

When new mail arrives the tokens are extracted, and the 15 tokens with the highest spam probability are used to calculate the probability that the message is spam. If the spam probability exceeds the threshold value — Graham uses 0.9 — then the message is assumed to be spam.

Graham's second filter had a number of improvements over the first version that broadened the range of tokens created and how they were compared with the table of tokens with spam probabilities. See Graham's second paper, "A Better Bayesian Filter" (DocFinder: 7839), for the details.

One interesting issue is how to handle HTML mail — do you ignore the HTML or analyze it? Graham chose the middle road and selected to analyze some HTML coding such as anchors and images, as these contain URLs that often contain words or patterns that indicate spamming. Even font tags prove to be useful because apparently spammers have a predilection for specifying bright red text!

Does it work? Well, Graham says in his last article: "Between Dec. 10, 2002, and Jan. 10, 2003, I got about 1,750 spams. Of these, four got through. That's a filtering rate of about 99.75%." Impressive stuff.

So why does Bayesian filtering work, and can spammers get around it? Bayesian filtering works by pure statistics, which is far simpler and computationally more efficient than trying to have a filter that understands message syntax or content in any meaningful way. The use of tokens provides a broad and consistent range of data points and, if you tune the filter by adding or removing your own spam and non-spam words, you wind up with a filter that is unique to you to a greater or lesser degree. This means that a spammer can't make guesses about any given filter configuration accurately enough to defeat it except by blind luck!

But as effective as Bayesian filtering can be, it requires optimization to be really good. And combining it with whitelists to minimize false positives, blacklists to minimize false negatives and other techniques, such as source verification, makes for a more accurate spam filter that needs less fine-tuning.

See if we filter you at gearhead@gibbs.com.

The coolest gadgets from Demomobile

Cool Tools
Quick takes on high-tech toys
By Keith Shaw

For two days in San Diego, the press, investors and other dignitaries got to see what's new in the world of mobility at the Demomobile 2003 show, run by IDG Executive Forums, a division of *Network World*.

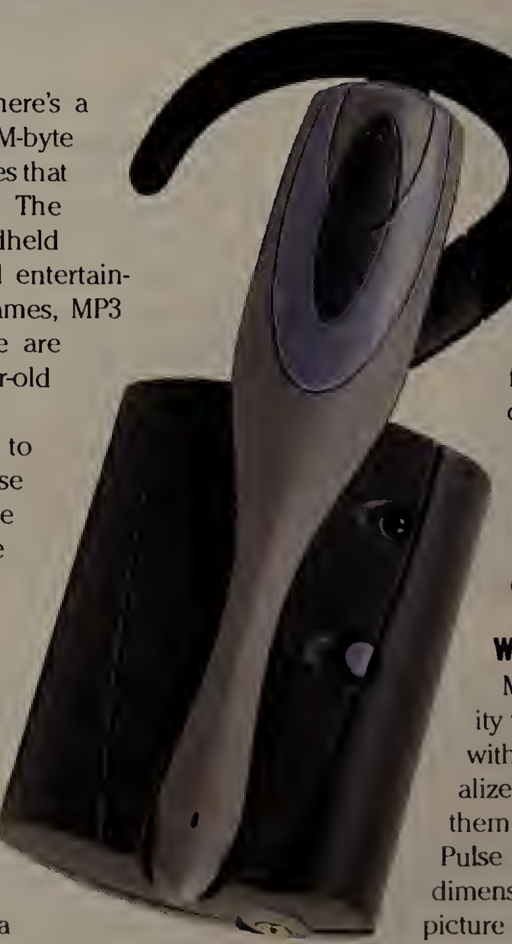
While there was lots to see in the enterprise arena, what most of us wanted to see was some new gadgetry. The show didn't disappoint, and here's a roundup of what you might be drooling for in the next few months.

The Zodiac from Tapwave is like a Game Boy for grown-ups.

It's a Palm! It's a Game Boy!

The Tapwave Zodiac devices (there's a 32M-byte model for $299 and a 128M-byte model for $399) were clearly the ones that everyone wanted to play with. The Zodiacs are Palm OS-based handheld PDAs that also act like a personal entertainment handheld and can play games, MP3 music files and video clips. These are being aimed at the 18- to 34-year-old "executive" market.

I wouldn't expect companies to begin placing a ton of orders for these anytime soon as a way to mobilize their data-entry applications, but the specifics on the device still are enticing enough for sales executives and others who want a combination game device and PDA. The Zodiacs are expected in mid-October. Go to the Tapwave Web site to order.



Fone-GEAR's Cord Free headset works without Bluetooth.

Hands-free without Bluetooth

Another must-have or at least a must-see item is the Aura Communications' and fone-GEAR's Cord Free headset, which uses magnetic induction to create a hands-free and cord-free headset for mobile phones. The headset works on a single AA battery and offers up to 25 hours of talk time and up to three months of standby power, the company says. It is compatible with phones that do not have Bluetooth, yet creates the same kind of effect of not having to be connected to your phone by a cord to use a hands-free headset. My favorite phrase during the demonstration was that the device creates a "secure communication bubble" for end users. The device also might cost less than Bluetooth headsets, with starting prices ranging from $60 to $80. The product will be available in the fourth quarter, the company said. Go to the Aura Web site for more details.

Why is my cat calling me?

Many current cell phones have the ability to take caller ID and associate a photo with the call. Some also can have personalized voice ring tones associated with them. Now comes Mobile Veepers from Pulse 3D — the technology can take a two-dimensional photo and create a 3-D animated picture with voice capabilities. Soon, expect to see "face tones" that lets the caller ID have an animated photo telling you to answer the phone. More details on the technology are available at Pulse 3D's Web site. During their demo, Pulse 3D officials showed an example in which a dog was "calling" using a French voice. I guess you had to be there.

Shaw can be reached at kshaw@nww.com.

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EDITORIAL

John Dix

MCI hangs its future on part of its past

MCI's focus as it emerges from bankruptcy can be summed up in two letters: I and P.

With one of the world's largest IP core networks, the technology figures prominently in everything MCI is doing, say Joseph Cook, senior vice president of network planning and engineering, and Jack Wimmer, vice president of network architecture and advanced technology.

"Our goal is to leverage that core, to drive all services to it," Cook says.

The company has committed publicly to migrating all voice traffic to IP by 2005. As part of that effort it has deployed 51 multi-service access gateways that initially can support voice over IP, frame and ATM. Besides making it possible to introduce new integrated IP-based offerings, these gateways let MCI start to step away from legacy gear.

The conversion "won't happen overnight," Cook says. "We won't shut down hundreds of Class 3 switches one night. But we'll never buy another Class 3 or Class 5 port."

Another way the company is encouraging migration and leveraging the IP backbone is with its Private IP service, a Multi-protocol Label Switching (MPLS)-based IP VPN service that can support legacy frame and ATM locations. That lets companies begin to benefit from VPNs without having to make a wholesale cutover. Cook says it is MCI's fastest-growing service.

According to Wimmer, who is responsible for looking at technologies a couple of years out, the next frontier is migrating T-1 access to packet. "All the stuff that is growing is packet-based," Wimmer says. "We need to get away from TDM grooming and establish native packet environments from the customer into the cloud."

While an early adopter and proponent of MPLS, Wimmer says MPLS isn't the answer for this next step because of scaling problems. Although he wouldn't give specifics, he says it might make more sense to use tunnels over 10G metropolitan Ethernet to reach individual customers in multi-tenant buildings.

Finding a packet answer is important because it could lower costs as MCI continues to build out its local access plant. The pressure to establish more direct customer links is enormous because 50 cents out of every dollar goes to access today, Cook says.

In fact, finding new answers to these and other issues seems to be higher priority than, say, integrating the two frame and two ATM networks that MCI runs today. "We looked and couldn't find a real business justification to integrate these networks," Cook says.

Bankruptcy problems aside, MCI seems to have set a meaningful technology direction that could benefit customers long term.

— John Dix
Editor in chief
jdix@nww.com

opinions!

Spam solutions

In his Backspin column "Solutions to spam" (www.nwfusion.com, DocFinder: 7823), Mark Gibbs discusses challenge/response systems. It's important to mention that these systems might not be compatible with many electronic transactions that we all use. Many messages are server-produced in e-commerce, for example, and challenge/response systems will eliminate valid messages.

Jim Becker
New Hope, Pa.

In discussing challenge/response systems in his column "Solutions to spam," Mark Gibbs writes: "The problem is that the testing technique often seems to irritate people because it's too complex." Well, if the message isn't important enough for the sender to answer a challenge, then it's not important enough for me to read.

At home I use ChoiceMail One from DigiPortal for spam filtering. ChoiceMail uses black/white lists only, and anyone not on either list gets an invitation to register for the whitelist. I then have the ability to read the reason for the request and accept or deny it. Often I recognize the sender and don't need to read the reason they've listed.

In the months I've used ChoiceMail, I've received several inquiries about it from people who want to use it and no real complaints.

Scott Hutchinson
Network support team
Sheriff's Information Systems
Contra Costa County, Calif.

Mark Gibbs' "Solutions to spam" is a nice, positive column, and that's the rub. There are a lot of good packages for fighting spam. There are also a lot of well-intentioned but flawed ones, and a lot of bad ones.

Products that require a human response have two flaws. First, instead of reducing traffic on your mail server, they triple it. Your mail server has to handle the initial message, your "test" reply and the response to the test, just to deliver the e-mail. Second, your response might either look "spammy" to your correspondent's mail server, or your correspondent might simply not understand your message, or react with open hostility to it.

We have a completely open, hackable protocol for e-mail, so of course it will be hacked in the current environment enmeshing the Internet. Cumbersome human procedures will not cure this, nor will ill-founded and poorly drafted laws. The reason "snail mail" works is because we put the items being mailed into an envelope, seal it and can tell at the other end that it has arrived intact. When we fix the problem of actually knowing from whom the e-mail came and that it arrived without modification, we'll have an e-mail system that works. Short of that, very little is going to help.

Wes Peters
Core team member
The FreeBSD Project
San Diego

The Dilbert factor

Regarding Howard Anderson's column, "The gospel according to Dilbert" (DocFinder: 7824): Having worked in several industries, I'm not sure that this is actually the nuttiest. It just has Scott Adams to call attention to it.

Also, I don't think IT professionals have anything to do with it being nutty. I strongly suspect that the real problems with all our industries today have more to do with the horde of MBAs spawned in the 1980s who are now sporting pointy hair as they make the decisions Anderson refers to in his column.

David Easter
Fallston, Md.

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

More online! **www.nwfusion.com** Find out what readers are saying about these and other topics. **DocFinder: 7822**

BOTTOM LINE

Joel Snyder

When will we ever learn?

Two years ago this month I wrote a column called "Learning lessons from Code Red" (www.nwfusion.com, DocFinder: 7742). Code Red had hit hard, taking over servers all over the Internet. It's still there — we get dozens of Code Red attempts every day from a worm that's 2 years old.

Two worms that hit this summer, W32/Blaster (also known as W32/-Welchia, W32/Nachi and Lovsan) and SoBig (also known as SoBig.F) spread exactly the same way. Microsoft published bulletins, but people ignored them. Patches were issued, but no one applied them. The worms came in through firewalls that shouldn't have let them in. Infected systems continued spreading the worms because we didn't have adequate tools to contain them. Two years after Code Red, there are still fundamental problems in the way we manage and secure systems that make us vulnerable to this kind of attack.

The first problem concerns ISPs. Worms spread like this partially because of the widespread availability of broadband Internet, specifically unfirewalled broadband Internet. People want to learn at home, so they bring up a Windows server. Why bother with a firewall; it's just a test box, right? ISPs traditionally have sold unfiltered bits to their customers.

At the enterprise level, we could count on firewalls. At the residential level, how much damage could a 28.8K bit/sec modem do? During the transition to broadband, ISPs have not changed their model. They insist on selling high-speed connections at rock-bottom prices, which is great for consumers — until the irresponsibility of ISPs in providing adequate security for their customers causes the whole Internet to fall to its knees. ISPs need to re-evaluate their policies on open access to customers, especially residential broadband customers who cannot be expected to firewall their own systems properly.

The second problem involves tools. Although network managers generally keep their houses in order, it's not because they know what's going on; it's because the system is so over-engineered that they don't have to know. Recent research shows an enormous amount of Internet traffic is plain garbage: packets that should never have gotten where they are, or even been allowed to leave their original network.

The bottom line is that we generally don't have a good way to say who is doing what on our networks. There are lots of tools out there, from URL watchers to intrusion-detection systems to IP-layer flow tools. Even most Cisco routers have flow-analysis tools built in. But few of us have installed them, and fewer still know how to use them.

Just answering the question "Who on my network is infected?" is not easy, even though these systems will stand out like a sore thumb. Network managers need to take a closer inventory of their networks and add tools that will help them monitor what's going on with all those bits. Without data, we're flying blind.

Snyder, a Network World Test Alliance partner, is a senior partner at Opus One in Tucson, Ariz. He can be reached at Joel.Snyder@opus1.com.

Two years after Code Red, there are still fundamental problems in the way we manage and secure systems.

ABOVE THE CLOUD

James Kobielus

Shakeout looms in Web services mgmt.

Web services management is one of the most innovative sectors in today's IT industry. Despite the general economic slump, dozens of start-ups have ventured into the WSM market over the past few years. Consequently, enterprise customers can choose from many sophisticated tools for managing their complex Web services middleware environments.

WSM is no passing fad. WSM tools address a growing need in today's Web-oriented e-business environment. They help companies ensure that the performance, reliability, availability and security of Web services environments continue to comply with service-level agreements and quality-of-service requirements. By contrast, traditional IT management tools can't monitor the end-to-end performance, availability, reliability and security of Web services environments. Typically, organizations deploy management tools associated with particular application, server and network environments. This explains why companies turn to WSM for a holistic view of service performance, as well as invest in enterprise management frameworks from Computer Associates, HP, IBM Tivoli and other strategic vendors.

But today's WSM market is overcrowded and due for a serious shakeout. Start-ups are having a tough time establishing WSM as a separate market from IT management tools. WSM tools don't eliminate the need for traditional management tools that focus on particular applications, systems and network environments. You can't optimize Web services if you don't have the tools for viewing and fixing problems that originate in the underlying infrastructure.

Sensing an opportunity to strengthen their competitive positions, management vendors are adding WSM features to their offerings. Others are bootstrapping themselves into the WSM market through strategic acquisitions. We see evidence for the latter trend in CA's recent acquisition of Adjoin and HP's announcement of its intention to buy Talking Blocks. Over the next several years, traditional IT management vendors will dominate the WSM market as they leverage their established customer bases and product families. Likewise, vendors of application servers, integration brokers, operating environments and other Web services platforms will embed WSM features in their offerings.

As we can see with Adjoin and Talking Blocks, some WSM start-ups are merging or partnering with established tool and platform vendors. They realize that most users would prefer that this functionality be integrated into enterprise management environments. It could be only a matter of time before many of the other WSM pioneers find their respective suitors.

Today's WSM start-ups will need to aggressively partner, specialize and diversify if they want to survive the coming industry consolidation. Specialization will lead to profitability for some, and the WSM market will continue to splinter. Some WSM start-ups are positioning their products as special-purpose solutions such as Simple Object Access Protocol firewalls, content-aware SOAP routers and XML accelerators.

Many of these special-purpose WSM tools will blur into the established product segments with which they have the greatest affinities. For example, companies are beginning to consider SOAP firewalls from WSM vendors such as Forum Systems, Reactivity, Vordel and WestBridge as complementary to traditional IP firewalls, Web access management products and intrusion-detection systems. Likewise, organizations are beginning to consider how best to deploy the Layer 7 routing features of some WSM tools from vendors such as Actional, AmberPoint and Blue Titan in conjunction with traditional Layer 3 devices such as IP routers, network load balancers and application switches.

WSM is an exciting, dynamic market. But it's also a battlefield in which many pioneers will perish, and established tool and platform vendors will consolidate. Enterprise customers will find many tactical WSM tools for monitoring, security, performance optimization and other functions. But they should think twice about making strategic commitments to WSM vendors until the market has matured and the ultimate victors are clear.

Kobielus is a senior analyst with Burton Group, an IT advisory service that provides in-depth technology analysis for network planners. He can be reached at (703) 924-6224 or jkobielus@burtongroup.com.

Today's WSM start-ups will need to aggressively partner, specialize and diversify if they want to survive the coming industry consolidation.

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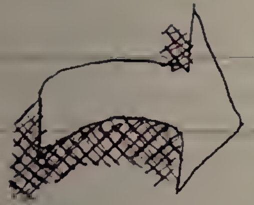
THE buzz ISSUE

OUR BIG-PICTURE LOOK AT THE HOT NEW TECHNOLOGIES VYING FOR YOUR ATTENTION.

Deciphering the doodle



An art therapist or handwriting expert could tell all sorts of things about people's psyches from their doodles. Such experts might interpret a plump chicken scrawled in the page margin as a sign of dieting, or a pile of books scribbled into the upper corner as a signal of being overwhelmed and feeling ready to topple.

Deciphering doodles isn't easy, even the experts admit, but they could be right — doodles might express subconscious desires, obsessions or concerns. As expert graphologist Anna Koren explains on The Graphology Center's Web site (www.annakoren.com), idly scribbling away appears to only be a partially conscious process. Yet, the doodler never appears surprised by what appears on page.

So what might the typical network executive be subconsciously drawing these days? I'll take a guess, and a stab at some analysis.

- Words such as "spam," "storage," "utility computing" and "wireless" repeated over and over, shaded-in or otherwise decorated: Anxiety, tension and self-doubt about hugely important technology choices.
- Character drawings with bulging brains: An obsession with making your network and data centers more intelligent and autonomous.
- Dollar signs or piggy banks: Concern about what buzzy technologies to bring into your production network in 2004, despite your limited IT budget.
- Repetitive curlicues or other repeated line drawings: Determination to get the job done, efficiently.
- An airplane or boat: Keeping track of all these network buzzwords, budgets and projects are driving you crazy. You need a vacation!

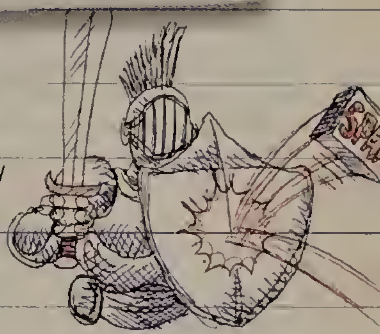
If this sounds like you, relax. Our annual Buzz Issue describes just what you need to know about the latest technologies — and promises to turn those doodles into flowers, rainbows, hearts and all things happy.

— Beth Schultz
Editor,
Signature Series
bschultz@nww.com

57 Michelle Butler, storage manager, is in favor of intelligence in the switch fabric, but only if her vendors support it.

DAVID RIECKS

48 Outwitting spammers
Clever, self-learning methods such as Bayesian filters and neural networks are the latest anti-spam buzz. But some fall frustratingly short for corporate use.



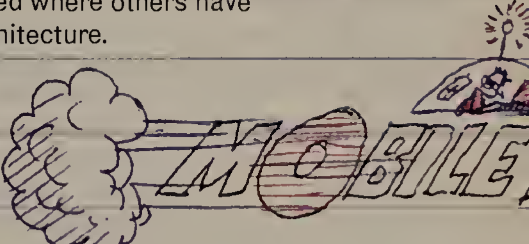
52 Security made simple
Security appliances are the latest rage, thanks to their easy deployment and high reliability.

54 FTTP fear factor
Some worry that RBOC Fiber-to-the-Premises plans provide more hot air than substantive value.

57 Storage gets smarter
Intelligence is moving to the storage fabric, but smart storage like this might only make sense for the biggest, most complex SANs.

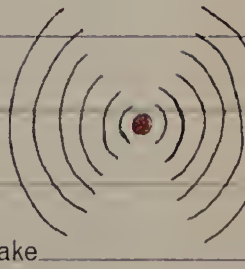
60 Real-time collaboration — for real!
Instant messaging and Web conferences are turning real-time collaboration into an enterprise staple.

63 Resurrecting the distributed app model
The service-oriented architecture promises to succeed where others have failed in building a network-friendly, reusable app architecture.



67 Ultimate mobility
Wi-Fi is the rage today, but the real mobile story lies in the convergence of multiple network types, application persistence and multi-modal devices.

71 To data center utopia
Utility computing initiatives dominate product road maps, but so far no one vendor has delivered fully on the technology's promise.



73 Raising an RFID ruckus
Radio frequency identification tags might make supply chains infinitely more manageable, but the privacy flap needs settling first.

74 Signature Sign-off
Industry murmurs
What emerging technologies are people starting to buzz over? We take a look at three.

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For more buzz, links, free newsletters and other resources, log on to www.nwfusion.com/buzz/2003/

63 John Studdard, CIO at Lydian Trust, says SOA is a real nifty marketing term.

TONY ARRUZA

Illustrations (cover and inside) by the Dynamic Duo and Tom Norton.

The Signature Series
The Buzz Issue is one of six bimonthly supplements providing insights, opinions and information on the biggest trends shaping the networked world. Watch for the Extended Enterprise Issue, a guide to the latest technologies for and challenges of building an extended corporate infrastructure, coming Nov. 10.

Three Imperatives for Managing and Protecting Microsoft Exchange

ESG Enterprise Storage Group
Storage Knowledge - Business Results

— By John McKnight

As e-mail has evolved from an alternative communications medium to an indispensable business tool, enterprise messaging applications such as Microsoft Exchange have been appointed mission-critical status in most IT organizations. With that status comes the need for high-availability solutions characteristic of other core enterprise applications.

However, keeping Exchange available to all users at all times with all user data intact is a formidable challenge for IT. From the Sobig.F virus to the user who insists on e-mailing a 5-minute "Terry Tate: Office Linebacker" video clip to 300 of his closest co-workers, there is no shortage of management and availability challenges awaiting today's Exchange administrator. What's more, in a time when most IT budgets are essentially flat, IT needs to deliver a reliable Exchange solution while containing costs.

Impossible? Well, no one is going to pretend that it's easy. However, by focusing on three challenges that highlight the connection between Exchange and its underlying storage hardware and software infrastructure, IT organizations can take steps that will ultimately reduce costs, increase availability, and improve end-user service levels — but first the bad news.

> **Keeping Exchange available to all users at all times with all user data intact is a formidable challenge for IT.**

A Triple-Header of Exchange Headaches

From an application infrastructure point of view, the following issues are among the most vexing problems for today's Exchange administrators:

- **Managing the growth of Exchange servers and associated storage.** Many IT shops are still on older versions of Exchange that support a limited number of users per server. For many of these companies, this has led to an explosion in the number of servers required to support the Exchange implementation. From a storage perspective, many of these servers have been implemented with internal or direct-attached storage, resulting in stranded capacity that cannot be leveraged by other servers and/or applications. Unless IT takes action, the costs of purchasing and managing an ever-growing number of Exchange servers — plus the direct and indirect costs of inefficiently utilized storage — threaten to spiral out of control.
- **Protecting Exchange without affecting end-user performance or availability.** Think about it: When e-mail goes down, *everyone* in the company knows it. Whether at their desk at 1 pm or in their pajamas at 1 am, if there's one application to which users demand continuous access, it's e-mail. Moreover, if an outage does occur, users expect a quick recovery with little or no data loss. Yet the deck is stacked against IT delivering both effective data protection and nonstop availability. Why? Double-digit data growth extends backup times and squeezes data protection windows; server proliferation adds to backup cost and complexity; and all of this is compounded by users that pay no attention to corporate e-mail policies, turning their Exchange inbox into their own personal presentation archive or MP3 jukebox. Furthermore, recovery requirements are becoming more and more complex. For example, IT must increasingly have the ability to restore a single message, not only for business purposes, but also — and more and more frequently — for when attorneys or government regulators are seeking evidence for a civil or criminal investigation. Which brings me to:
- **Complying with e-mail retention and retrieval regulations.** Regulatory compliance adds another wrinkle to the already complex world of Exchange. In the financial services industry for example, the United States Securities and Exchange Commission (SEC) has made it clear that under Rule 17a-4 of the Securities Exchange Act, broker/dealer e-mails are considered business records that are subject to stringent retention and retrieval requirements. This creates a number of requirements for additional hardware and software solutions that help users easily store, index, search for, and retrieve individual e-mail messages. Industry-specific regulations aren't the only reason why you should get your e-mail archiving house in order, however. Consider the recent case of *Zubulake vs. UBS Warburg*, in which the U.S. District Court of New York ruled that the party producing requested information — whether paper or electronic — is responsible for the majority of the cost of the data discovery process. This ruling further emphasizes the need for *all* companies to have an efficient and cost-effective way to archive and retrieve e-mail messages.

Exchange Shops Must Focus on Three Key Best Practices

To address these challenges, Exchange administrators should supplement their playbook with best practices in three key areas: consolidation, continuous availability, and compliance.

- **Consolidation.** If you haven't done so already, you should seriously consider migrating from Exchange 5.5 to Exchange 2003, not only for the additional features, but also because customers with newer versions of Exchange can realize significant capital and operational efficiencies through server and storage consolidation. Since Exchange 2003 supports 3,000-5,000 users per server, compared to 1,000-2,000 users for Exchange 5.5, IT can reduce its overall number of e-mail servers. This not only results in capital and operational savings from a server procurement and management perspective, but also provides the opportunity to take internal or direct-attached storage and consolidate that storage on a SAN- or NAS-based solution. Consolidating and networking your Exchange storage environment provides three key benefits. First, you can improve storage utilization by leveraging previously unused capacity where and when it is needed. Second, you will have laid the groundwork for a more efficient storage management strategy, since managing large pools of storage capacity with storage resource management software is much more cost-effective than managing many small islands of information with multiple tools. Third, consolidation of your Exchange storage also allows you to do centralized backup of your entire Exchange environment, instead of backing up each server to separate tape drives.
- **Continuous Availability.** Given its mission-critical status, the frequent backup of Exchange is a primary focus of any data protection strategy. However, backing up without impacting end-user service levels is a tremendous challenge for Exchange administrators. The good news is that number of vendors now offer advanced Exchange-specific backup and recovery products that allow users to effectively backup and restore Exchange servers while they are on-line and in use. For example, some of these new products leverage built-in snapshot technology, enabling you to conduct backups to and recoveries from the Exchange snapshot. This results in virtually no impact to application availability and also reduces backup and (especially) recovery times by utilizing high-speed disk instead of tape. In addition, several products can now quickly and reliably restore Exchange environments at a very granular — i.e. mailbox, folder, or even individual message — level, enabling customers to meet new e-mail restoration requirements.
- **Compliance.** As e-mail is increasingly sought in regulatory investigations, lawsuits, and other legal proceedings, the shortcomings of many traditional backup and recovery solutions become evident, particularly the ability to *quickly and cost-effectively* locate and restore messages. Fortunately, a number of vendors now offer e-mail archiving products that capture all incoming and outgoing messages and attachments on a separate server for easy indexing, search, and retrieval. There can be significant financial benefits to implementing these solutions. Not only can they help avoid fines such as the $100,000 penalty charged to securities firm SG Cowen for failure to produce e-mail records in court, they can also significantly reduce the overall costs associated with retrieving and producing e-mail records. Again, consider that in the *Zubulake vs. UBS Warburg* case, it was estimated that it would cost UBS more than $270,000 in IT consulting and legal fees to restore a relatively small number of e-mails from some 77 different backup tapes!

Summary

The new realities of enterprise messaging environments — unrelenting growth, nonstop availability requirements, and compliance with record retention regulations — aren't going away any time soon. However, IT can take action today to address these challenges: Consolidating Exchange server and storage infrastructures, ensuring continuous availability through new backup and restore technologies, and ensuring compliance with e-mail retention and retrieval regulations will lead to improved service levels, happier users, and lower capital and operational expenses – not to mention increased peace of mind for your CEO, CFO, and General Counsel.

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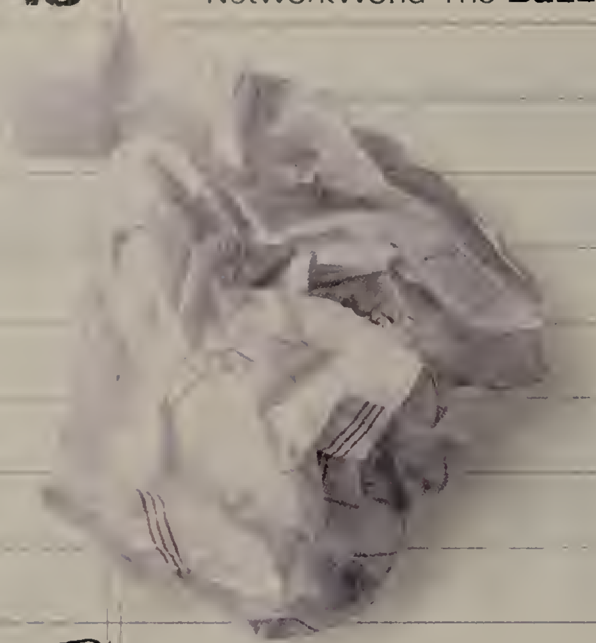


Outwit

Clever, self-learning methods such as Bayesian filters and neural networks are the latest anti-spam buzz. But some fall frustratingly short for corporate use.

■ BY JULIE BORT

Spam, the four-letter word of the virtual world, seems to be on everyone's lips these days, from rank-and-file workers to Congress and the British Parliament. The buzz occurs with good reason: Spam has leapt from a minor, annoying byproduct of e-mail to an epic business problem. Unsolicited e-mails are growing at a rate of 5% per month, according to a Kessler International survey. That means thousands of unwanted e-mails per week, often totaling 75% of the messages an enterprise e-mail gateway must process — while clogging downstream wires and servers, users say.

Spam on that scale also sucks up employee time; Nucleus Research reports that nuisance e-mail costs $874 per person annually in lost productivity. And with some messages so obscene as to make a merchant marine blush, much of the spam content is inappropriate for a business environment, if not outright illegal.

What to Ask?

Questions for your anti-spam tool vendors

- Does the filter run on the gateway or the client?
- How does your product adapt to the new ways spammers have devised to foil filters?
- If updates are required, how quickly are they made available ?
- How does the product protect against false positives?
- How can the product's spam analysis be adjusted if it labels too many false negatives?
- What kind of spam analysis tools does it include?

Government intervention has been discussed considerably as a solution, but network professionals aren't holding out for relief from legislation. Its effectiveness will be iffy at best (see sidebar, page 48). For the time being, exterminating the spam menace will remain the task of the network team. That's easier said than done. E-mail marketers constantly find ways to thwart existing e-mail filters. Anti-spam software vendors, in turn, create new filters intended to spot spammer's latest tricks. Not only must network executives frequently update software to get the latest filters, but the more filtering they switch on, the higher the chance that legitimate e-mail gets mislabeled and deleted as spam.

The latest crop of filters promises to stop this yo-yo cycle. These filters are based on "self-learning" or "machine-learning" technologies that attempt to adapt automatically to spammers' new tricks while protecting legitimate e-mail. Among machine-learning technologies in commercial spam filters, Bayesian filtering and neural networks are the most talked about, with Bayesian filtering generating a downright roar. In the past few months, this type of filter has been implemented in a growing number of anti-spam products, ranging from open source product SpamAssassin to an enterprise-class spam-detection module from start-up ProofPoint.

Users who have tried Bayesian filtering recommend it.

"I implemented SpamAssassin before Bayesian was part of it, and it worked pretty well, but with Bayesian, it works much better. Bayesian is essential in this day and age," says John Stewart, senior technical specialist for Artesyn Communication Products in Madison, Wis.

But, unlike more established anti-spam technologies like dictionary scans, blacklisting and heuristics, today's buzzy machine-learning filters are not always a straightforward affair for a corporation. (See anti-spam glossary, page 47.)

Spam or not-spam

Bayesian filters are based on an algorithm for classifying documents, says Paul Graham, an independent programmer who created an early, open source Bayesian spam filter. Because all spammers must somehow state their message — despite any tricks they use to fake out filters — Bayesian's techniques for intelligently classifying content have proven effective.

First, the user divides e-mail into two piles, spam and not-spam, from which the filter trains itself. The filter analyzes every word in each e-mail and determines how frequently the word occurs in the spam pile vs. the not-spam pile. For instance, when the filter finds "V-1-A-G-R-A" in spam but never in not-spam, V1AGRA earns a 100% probability of being a spam "word." Because "the" occurs equally in spam and not-spam, it gains a neutral 50%, while innocent words such as RFP would occur in not-spam but rarely (if ever) in spam, giving it, for instance, a 99% probability of being a not-spam word.

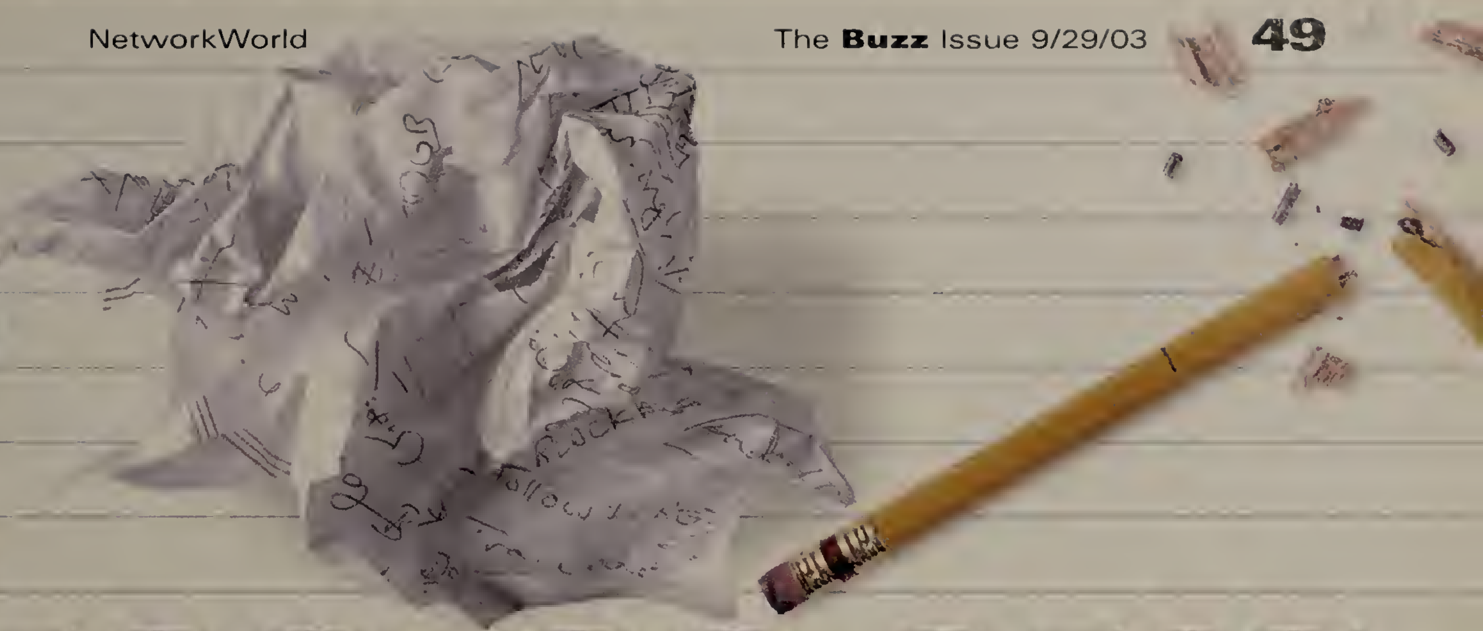
When an e-mail arrives at the trained Bayesian filter, the filter looks for the 15 words with the highest probabilities — "either very guilty or very innocent," Graham says — and uses them to calculate the message's overall spam probability. Tricks like replacing the "i" with the numeral 1 in VIAGRA might confound the simple dictionary filter, but they help the Bayesian filter.

"If spammers say V1agra . . . my God, is that guilty — even more than Viagra. Conceivably, people might be writing each other e-mails about Viagra, but they are not going to be writing about V-1-a-g-r-a," Graham says.

In most products, Bayesian filtering is only one of several tests in a heuristics process that determines the e-mail's overall spam probability. Once that's done, the anti-spam tool embeds a spam rating in the message header and then typically sends the e-mail on to the client's e-mail software, which uses the tag to sort or delete the message, per user instructions.

Should the filter err, calling a legitimate e-mail spam or questionable (the false positive) or tagging spam as legitimate (the false negative), the end user would send the falsely labeled message to the correct folder. The filter uses these folders to retrain itself daily or per user-specified frequency. Regular training assures that the filter automatically learns the latest spammer tricks (such as garbage charac-

"[SpamAssassin] literally changed my life . . . there's jus spam than to have a filter." **John Stewart, senior technical specialist, Artesy**



ting spammers

ters in the subject line and spaces between letters). Filtering is also personalized. The banker can accept mortgage offers from the competition as legitimate — while the office manager deletes them as spam.

Because Bayesian filtering was designed for the client, it is most commonly a feature of consumer products, with a price of about $30 per license. Vendors, no doubt, would be willing to negotiate less-expensive, volume prices for enterprise deployments. Many Bayesian filters also are available for free as open source tools.

Clogging the gateway

While Bayesian filtering's client-side bent is an elegant way to stop spam from sponging up productivity, its drawback is that it introduces major client-management headaches when used on an enterprise scale. That calls for some creativity.

Artesyn's Stewart customized SpamAssassin so that it will filter e-mail at the mail gateway, not the client. Typically, SpamAssassin is a Unix product intended to run after the mail is delivered — with a Unix e-mail client or on the box that holds the point of presence and Internet Message Access Protocol accounts, Stewart says. He modified SpamAssassin so that mail can flow through it. SpamAssassin runs on a server he calls the "Spaminator," along with AMaVIS-new, an open source anti-virus scanner that includes a call to SpamAssassin, and PostFix, a Unix mail program. Custom PERL scripts handle various e-mail management tasks.

When an e-mail arrives, it is scanned for viruses and trotted through SpamAssassin's heuristics tests, which includes Bayesian filtering (in Versions 2.5 or later). SpamAssassin tags the e-mail with a spam level and sends it onto the company's Microsoft Exchange servers, which deliver it into Outlook clients. If configured to do so, Outlook sorts the messages into various folders according to their spam level.

Stewart lets employees opt into the anti-spam program. On the intranet, he posted detailed instructions on setting up Outlook in-box rules to sort mail using the spam-level tags. If employees find mislabeled spam, Stewart asks that they forward it to a special folder for use in retraining the Bayesian filter.

Management of Outlook clients has been a non-issue, he says: "Eighty-plus percent of the people who do this figured it out without any help from IT. If someone does have a problem, it's not that big of a deal to get IT staff out there to check out their rules."

So far, about 100 of Artesyn's 250 employees participate in the anti-spam program; many of these participants are engineers whose e-mail addresses are widely available from Usenet postings. Since he began filtering spam, Stewart has discovered that Artesyn receives between 3,000 and 4,000 unwanted e-mails a day, compared with 750 legitimate messages a week. SpamAssassin "literally changed my life," Stewart says, noting that he is no longer hobbled by the constant e-mail checks required when spam was pouring into his in-box. "There's just no other way to deal with spam than to have a filter."

By using open source code, putting a spare PC to use as the Spaminator server and exerting a little programming elbow grease, "Our total investment in this was zero — it was just my time," Stewart says.

Neural networks

Yet, Artesyn's creative adaptation only eliminates installing software on clients — and managing it thereafter. But it still ultimately deals with the spam at the client and so, like most Bayesian filtering products, does nothing to ease the stress all that unwanted e-mail places on network processors.

Artesyn's network can handle the load, so Stewart favors this approach as an insurance policy that legitimate mail isn't deleted as spam. "It's bothersome,

no other way to deal with

Communication Products

Anti-spam glossary

Network World's anti-spam fighter, Peter Hebenstreit, recommends familiarity with these methods of stopping unwanted e-mail.

Attachment checking — Checks for macros and text in attachments.

Blacklists — Let users designate a source or IP address from which no mail will be accepted.

Code checking — Looks for "open new window" or any other type of scripting that might be malicious.

Complex dictionary checking — Screens text for no-no words and won't be fooled by various tricks, such as the replacement of letters with look-alike numerals (c001 = cool).

Content checking — Scans plain text for key phrases and the percent of HTML, images and other indications that the message is spam.

Header checking — Checks for valid Multi-purpose Internet Mail Extensions content, valid Simple Mail Transfer Protocol addresses and the like.

Heuristics — A checklist of rules and tests to determine mathematically the likelihood that the message is spam.

Machine-learning or self-learning — Methods, such as Bayesian filtering, by which the filter can create and update its own heuristics checklist.

Snapshotting or fingerprinting — Identifies that similar, yet not identical, messages are part of the same, already-identified spam broadcast.

Whitelists — Lets users designate a source or IP address from which all mail will be accepted, even if individual messages earn high spam ratings.

— Julie Bort

but we've got the capacity to handle it. A false positive is much worse than a false negative. Sales doesn't want to lose a possible sale," he says. "If this was my personal mail, I would certainly just drop it at the gateway. But as a business, we need to make sure we're not getting rid of legitimate e-mail."

Bayesian-like technologies for products that operate at the e-mail gateway are what's needed for that, some vendors say. Joshua Elicio, information security officer for Memorial Health Center in Las Cruces, N.M., says stopping spam at the gateway is critically important. He doesn't want to drop legitimate e-mail, but doesn't want spam clogging up the network plumbing, either.

In March 2002, Elicio activated anti-spam filters in the anti-virus software he used, SurfControl's E-mail Filter, to stop spam at the gateway. Of the 4,600 e-mails the hospital received per week, he saw that only about 750 were legitimate. Elicio analyzed those e-mails and decided to take the more drastic measure of blocking e-mail generated from suspect origins. "We're a hospital in southern New Mexico. We don't deal a lot with Czechoslovakian companies," he quips. With that, plus other SurfControl filters, Elicio has reduced spam to 300 messages a day. "Spam doesn't get to the inbox," he says.

The downside is that the more aggressively a network executive blocks spam — the more "intelligent" and automated the process — the higher the risk of false positives. But Symantec and other vendors using neural networks say that technology applies self-learning in a safer and more appropriate way than Bayesian filtering could at the gateway.

A neural network, based on artificial intelligence algorithms, is similar to Bayesian filtering in that the software trains itself to recognize new spam. But the software for training resides at the vendors' sites, not on users' clients. The batch of e-mail by which neural networks train comes from thousands of phony e-mail in-boxes the vendors set up to collect spam. With millions of spam messages to examine hourly, the machine-learning software is constantly on the cutting edge of spammers' tricks, vendors say.

But, similar to anti-virus software, products using neural networks require users to update their gateway software at regular intervals, usually once a day. Messages identified as spam at the gateway can be lodged in a spam folder for administrator review. Or, if the message's spam rating is high enough (while the company's concern over false positives is low enough), the message can be deleted outright.

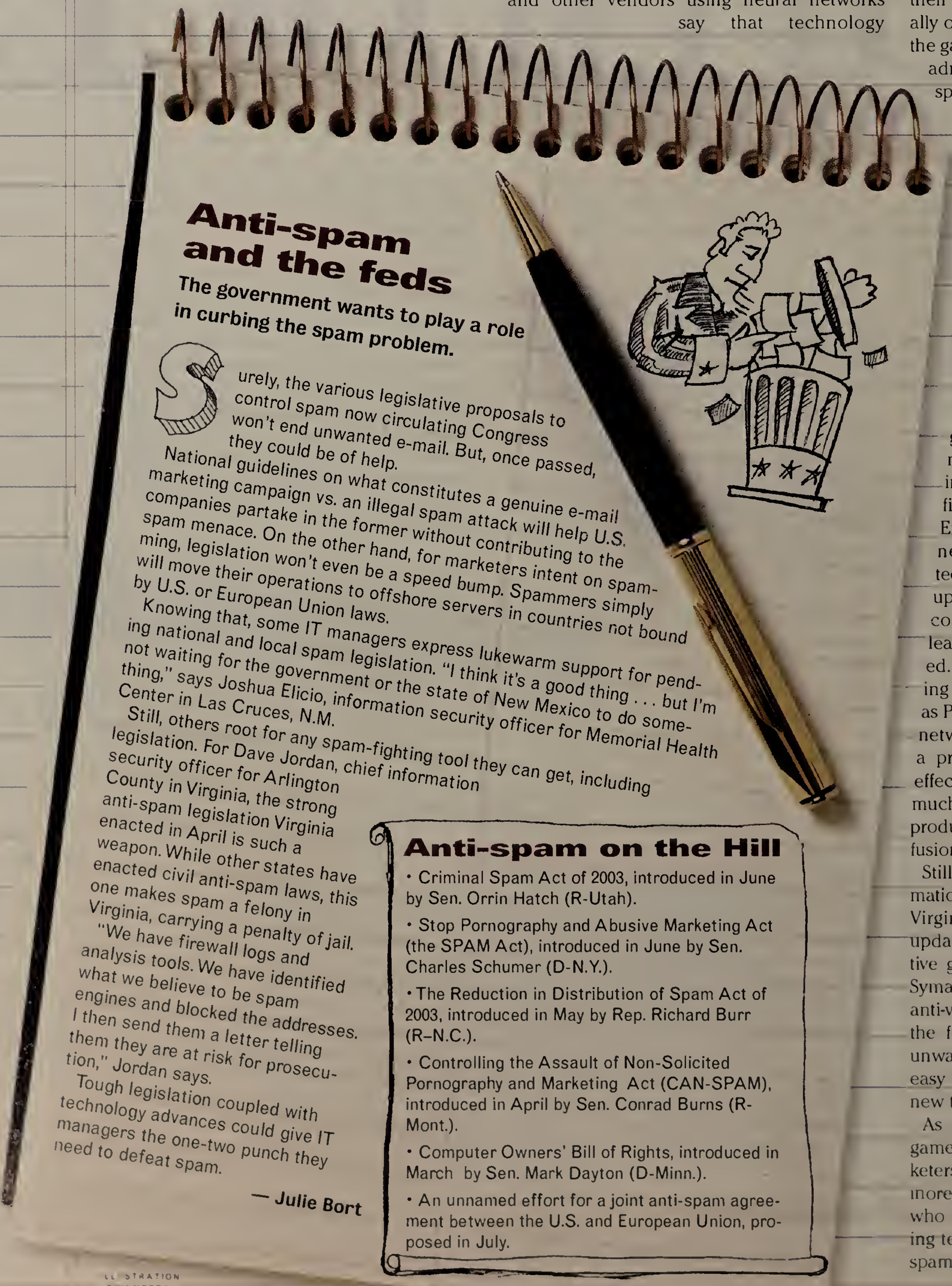
Software in this genre runs from $15 to $20 for a 500-user license and drops considerably for larger installations. This fee includes the gateway software and the ongoing service subscription, vendors say.

Lost advantage from automation

Vendors using a neural network say their products detect new spam methods faster than competitors without one. But gateway filtering methods other than neural networks also use the mass phony in-box model, with one example being the fingerprinting Brightmail uses in Antispam Enterprise Edition. So you could fairly call neural networks just another back-end technology that depends on how quickly updates are available and applied. Needing constant updates is the reason that self-learning filters such as Bayesian were created. It is even the downside for gateway filtering products that use Bayesian filtering, such as ProofPoint's software. All this means neural networks are not automatically a harbinger of a product's superior performance. Plus, the effectiveness of any spam product depends as much on tuning as its technology. (See our product review "Spam in the wild," www.nwfusion.com, DocFinder: 7826.)

Still, users such as Dave Jordan, chief information security officer for Arlington County in Virginia, say that continuously grabbing updates is a small price to pay for always-effective gateway filters. In January, Jordan added Symantec's anti-spam filters to the Symantec anti-virus tool Arlington uses and watched as the filters immediately blocked up to 2,000 unwanted e-mails per day. "This has been an easy introduction of new technology — and new technology is usually disruptive," he says.

As long as spam remains a cat-and-mouse game between companies and e-mail marketers, vendors will be pressured to make ever-more-intelligent and adaptive filters. For those who haven't yet investigated automated filtering techniques, at a 5% increase per month in spam, now is the time to do so. ■



Anti-spam and the feds

The government wants to play a role in curbing the spam problem.

Surely, the various legislative proposals to control spam now circulating Congress won't end unwanted e-mail. But, once passed, they could be of help.

National guidelines on what constitutes a genuine e-mail marketing campaign vs. an illegal spam attack will help U.S. companies partake in the former without contributing to the spam menace. On the other hand, for marketers intent on spamming, legislation won't even be a speed bump. Spammers simply will move their operations to offshore servers in countries not bound by U.S. or European Union laws.

Knowing that, some IT managers express lukewarm support for pending national and local spam legislation. "I think it's a good thing . . . but I'm not waiting for the government or the state of New Mexico to do something," says Joshua Elicio, information security officer for Memorial Health Center in Las Cruces, N.M.

Still, others root for any spam-fighting tool they can get, including legislation. For Dave Jordan, chief information security officer for Arlington County in Virginia, the strong anti-spam legislation Virginia enacted in April is such a weapon. While other states have enacted civil anti-spam laws, this one makes spam a felony in Virginia, carrying a penalty of jail.

"We have firewall logs and analysis tools. We have identified what we believe to be spam engines and blocked the addresses. I then send them a letter telling them they are at risk for prosecution," Jordan says.

Tough legislation coupled with technology advances could give IT managers the one-two punch they need to defeat spam.

— **Julie Bort**

Anti-spam on the Hill

- Criminal Spam Act of 2003, introduced in June by Sen. Orrin Hatch (R-Utah).
- Stop Pornography and Abusive Marketing Act (the SPAM Act), introduced in June by Sen. Charles Schumer (D-N.Y.).
- The Reduction in Distribution of Spam Act of 2003, introduced in May by Rep. Richard Burr (R-N.C.).
- Controlling the Assault of Non-Solicited Pornography and Marketing Act (CAN-SPAM), introduced in April by Sen. Conrad Burns (R-Mont.).
- Computer Owners' Bill of Rights, introduced in March by Sen. Mark Dayton (D-Minn.).
- An unnamed effort for a joint anti-spam agreement between the U.S. and European Union, proposed in July.

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Security made simple

■ BY BOB VIOLINO

Security appliances are the latest rage, thanks to their easy deployment and high reliability.

Today's security appliances perform so many necessary security functions, they are becoming irresistible to network executives. IDC reports that worldwide unit shipments of security appliances increased 17% in the first quarter of this year over the first quarter of 2002.

True, network executives still prefer the traditional software-on-server approach for their conventional needs — like the main corporate firewall. But they like appliances for their simplicity and convenience, particularly when securing small or home offices.

"What appliances have going for them is you can drop them into a network, configure them and you're done," says Laura Koetzle, a senior analyst at Forrester Research. "We see this in organizations that have a lot of branch offices, with people in the field who are not technical but need to have some sort of security. You can configure the appliance in the head office and ship it out to the remote office."

Adds Charles Kolodgy, research director at IDC: "You don't have to worry about patch levels on the systems, you don't have to worry about interactions between software on another machine, and you don't have to worry about buying an operating system. You just have to receive the box from the vendor."

However, appliances have limitations. They aren't as reconfigurable as software-based security applications. "Appliances can really only do what they're designed to do," Koetzle says. "If your needs change radically it's tough to update appliances. If your needs are stable then appliances make total sense."

Beyond firewalls

The earliest models mostly combined firewall and VPN functions, but today's crop integrates a wider range, such as intrusion detection, antivirus protection and content filtering. "Pretty much everything that you can do with software you can do with an appliance," Kolodgy says.

As appliances' capabilities have expanded, network executives gained a path for adding new security protections to their networks. Mike Grimm, CIO at Seton, a Norristown, Pa., manufacturer of leather automotive products, uses Fortinet's Fortigate 200 and 400 appliances for VPN, packet-level virus-scanning and firewall functions. He soon will use the products' intrusion-detection capabilities as well, he says.

Seton is in the midst of an appliance rollout that began early this year, with plans to use appliances at 11 regional sites worldwide, Grimm says. All traffic going in or out of each facility passes through the devices. Grimm initially had concerns that the packet-level scanning might cause latency problems with data flow, but says his fears have proven unfounded.

By using the appliances' VPN functions to secure remote offices, Seton will become less reliant on its frame relay network. Over time, Grimm will phase out frame altogether for these offices, saving the company an expected $12,000 per month in telecom costs, he says. The appliances cost about $50,000.

Plus, with multiple security functions executed by a single device, "less staff is needed to maintain security," Grimm says. On the down side, "if you have a hardware failure you're in trouble. We have had hardware appliances fail us in the past," he says. To counter that, he has placed a second, redundant appliance at each site.

As for intrusion-detection, time will tell how well the appliances perform. Grimm does note that through the first seven months of use, Seton hasn't suffered any major breaches such as viruses or hacker attacks.

Still, Seton also uses a few server-based security software applications, such as the virus scanning of its enterprise e-mail systems. Seton began using software from Trend Microsystems several years ago before the anti-virus appliances were available. Grimm feels that keeping it in place gives Seton multiple layers of protection for e-mail.

Protecting thousands

Raymond James Financial, a financial services company in St. Petersburg, Fla., also is using a combination of appliances and traditional security software. The company uses Linux-based appliances called V6 from VPN Dynamics, equipped with Check Point software for firewall/VPN and intrusion detection and prevention.

Raymond James has installed appliances at 50 of its locations worldwide and ultimately plans to deploy the devices at 2,000 to 3,000 offices, says Scott Loach, senior information security engineer. The appliances cost about $500 each, including hardware and software, Loach says, and are proving to be a cost-effective way to secure its widespread network of home offices and independent financial advisors environments — smaller facilities that are not covered by the corporate firewall.

Simplicity, centralized management and monitoring were among the key selling points for the appliances, Loach says. While he isn't planning on tossing out the server-based Check Point software now used as the main corporate firewall at headquarters, Loach finds appliances equal the reliability of server-based software.

Analysts agree: Be it start-ups, niche players or mainstream security vendors, this is a highly competitive market that only will become more so as appliances' popularity soars.

Violino is a freelance writer covering business and technology. He can be reached at bviolino@optonline.net.

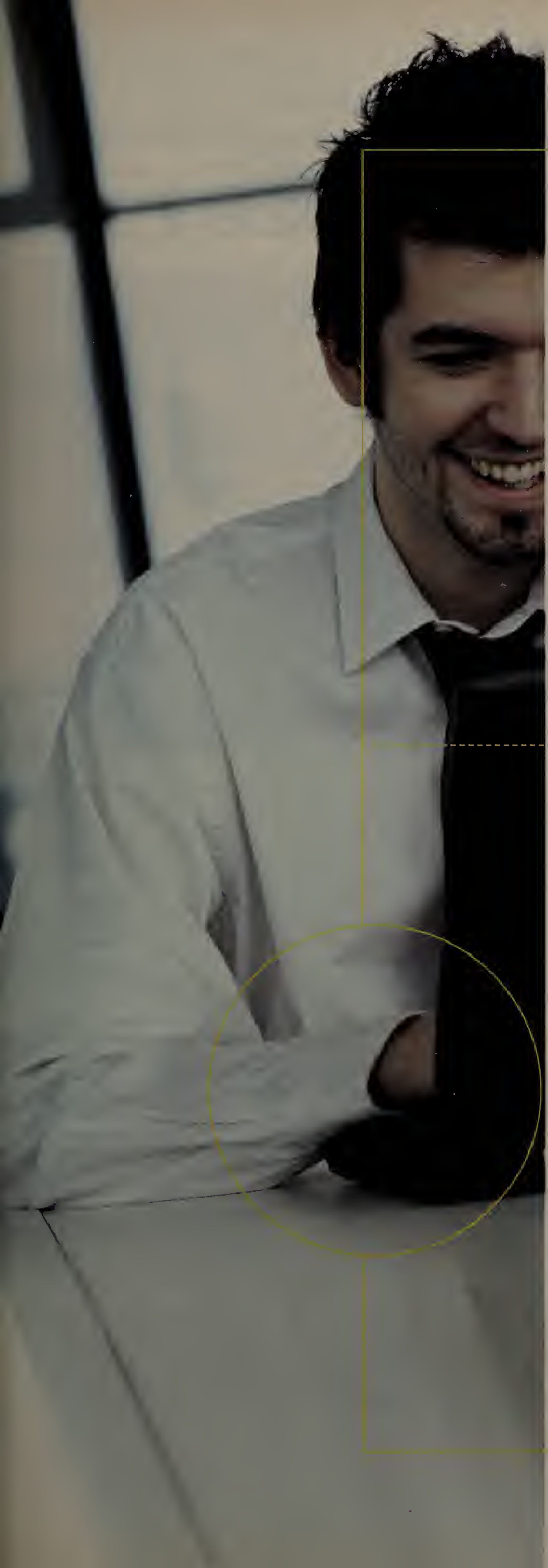
What to Ask?

Questions for your security appliance vendors

- What security standards does your box support?
- In what ways is the appliance's operating system hardened?
- Under what circumstances will the appliance need to be updated with patches and how difficult is that process?
- How compatible is the appliance with the rest of our IT infrastructure?
- If we buy multiple devices, can we manage them as a pool rather than separately?

A sampling of security appliances

Vendor	Product	Description	Price
Fortinet	FortiGate 3600	Network-based anti-virus, Web content filtering, firewall, VPN and intrusion detection.	About $30,000.
NetScreen Technologies	NetScreen-IDP	Intrusion-detection and -prevention device.	NetScreen-IDP 10 is about $8,000; IDP 100 is about $16,500; IDP 500 is about $35,000.
Nokia Internet Communications	Nokia Secure Access System	Secure Sockets Layer VPN.	From $3,500 to $12,000 for 10 connections, ranging up to $55,000 for 500 connections.
SonicWall	SOHOTZW	Integrated firewall and VPN for wireless environments.	Available in base configuration supporting up to 25 users, with upgrades to 50 or unlimited users for $895.
Symantec	Gateway Security5400 Series	Firewall, VPN, intrusion detection and prevention, anti-virus software and content filtering.	Ranges from $4,000 to $51,300 based on model, functions and number of nodes used.



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NETWORKS™

FTTP fear factor

Some worry that RBOC Fiber-to-the-Premises plans provide more hot air than substantive value.

■ BY JENNIFER JONES

Fervor over Fiber to the Premises has the attention of many network executives who, like George Mason University's Randy Anderson, have been locked into reliance on traditional T-1 lines to outfit remote sites with high-speed connectivity.

Of FTTP, Anderson, director of network engineering and technology at the Fairfax, Va., university, says: "We'd love to explore that possibility." He considers FTTP as a potential alternative to DSL, which he hasn't embraced because of its dubious track record on reliability.

FTTP promises better performance and greater speed than DSL, which is delivered to the premises via copper. It will run at 100M bit/sec vs. the 1.5M bit/sec or so DSL hovers around, sources say. For corporations, proponents point to applications such as PC backup, telecommuting and high-definition videoconferencing as ripe for FTTP deployments.

Yet some industry watchers say the buzz surrounding FTTP might be more hot air than substantive network plans. Even Anderson says that he doesn't anticipate FTTP soon displacing any network connections.

"A lot depends on the carriers getting an effective FTTP strategy and really supporting it," he says. "For businesses, that is really key. They have to be able to get the access and be assured that it will stay up and get fixed if it happens to go down. DSL does not have any of those advantages."

FTTP relies on passive optical network (PON) technology to bring high-speed fiber optic all, or almost all, the way to a remote office, small business or home. It requires carriers to replace antiquated copper with entirely new fiber infrastructure.

While fiber optic is finding its way into carriers' long-haul infrastructures and has heavily penetrated larger metropolitan-area networks (thanks to the efforts of now mostly defunct upstart competitive local exchange carriers). experts say that when it comes to extending fiber to businesses or homes, it is more a case of almost than all the way.

FTTP will change that, says Daniel Briere, CEO of consultancy TeleChoice. "FTTP is the next big push in fiber," he says.

Three of the four regional Bell operating companies — BellSouth, SBC and Verizon — certainly have indicated as much. In May, they turned FTTP into public network buzz when they announced the adoption of the ITU-T's G.983 standard for ATM PON. Further, the three companies gathered bids in August for the equipment needed to assemble FTTP backbones. Companies are hush on the fine print in that RFP, but industry experts say the carriers are examining offerings from Alcatel, Cisco, Lucent, Nortel and Siemens.

Most consider this heated effort a response to cable operators' formidable campaigns to extend high-speed Internet access to their customer bases. And many see it as less a technology move than a regulatory ploy — and a successful one, given the FCC's decision in late August to let the RBOCs stop offering discounted line-sharing services to competing ISPs offering residential DSL services. In a preliminary decision in February, the FCC had made it clear it wants to see fiber laid to more homes and businesses in outlying and rural areas, and the RBOCs pushed PON-based FTTP as a cost-effective means of getting that fiber out.

"The RBOCs are in some ways just passively encouraging fiber to the home and fiber to the premises because it makes them look good in front of the FCC. It makes it look like something is really happening here," says Thomas Nolle, president of research firm CIMI.

The RBOCs say otherwise. "We will be ready at the beginning of next year for volume deployments," says Jim Jackson, research director at BellSouth.

Keith Cambron, CEO of SBC Laboratories, describes the likely course of FTTP deployments: "What you will see in 2004 will involve mostly new construction, what we call 'green fields,' and a lot of fiber extended to multiple dwelling units. After that, we will begin what we call 'aerial plant rehabs,' where we will go in and begin replacing copper plants that are 20 years old."

But Gartner predicts that FTTP deployments of any significance will not materialize before 2010. And Nolle dismisses RBOC plans as being limited to the newest suburban communities. "We already have upscale, affluent neighborhoods that are wired with fiber. That is just eye candy, proof-of-concept stuff," he says.

BellSouth has its fiber-to-the-curb initiative, which boasts 1 million lines of fiber to the home; and SBC has dabbled in FTTC in a Mission Bay, Calif., trial, according to a recent Gartner report.

But the carriers insist they also will pursue corporate accounts. BellSouth's Jackson even says, "The most interesting opportunities I see are the ones involving campus environments." He points to Coca-Cola and Delta Airlines as ideal FTTP candidates.

Small businesses situated within or near new suburban communities also could make use of newly available fiber, carrier executives say.

George Mason's Anderson is awaiting word from his carrier, Verizon, for details on when FTTP might be available for the university's use, though he's not interested in a full-scale campus deployment. "This is something that is more suited for remote offices. Our campuses are fully wired," he says. "But the problem is when we move people off site. This area [northern Virginia] is growing so rapidly that we have more and more people stuck out in the boondocks."

However, given DSL's sub-par showing, CIMI's Nolle and others question whether demand requirements amid businesses or even consumers justify a major push for fiber. Qwest, the RBOC holdout on FTTP, says it isn't registering much demand. A company spokeswoman says the carrier doesn't see enough potential returns on heavy FTTP investments to join in on this latest industry buzz.

Jones is a freelance writer in Vienna, Va. She can be reached at jjwriterva@aol.com.

What to Ask?

Questions for your RBOC

- When will FTTP be available, especially for my hard-to-outfit locations?
- What would my users be able to do with fiber infrastructures that they cannot do now with DSL or high-speed cable service?
- Would my company have to share in trenching or other costs associated with extending fiber to a facility?
- For users with multiple locations and points-of-sale activity: Would volume discounts and increased reliability offset an investment in fiber?

FTTP: The new DSL?

Fiber to the Premises and DSL are aimed at small businesses, remote offices and consumers, but they have their differences.

FTTP

- Entirely new fiber infrastructures designed to bring carriers new revenue streams.
- Avenue for new services by affording 10 to 100 times more bandwidth than DSL.
- Applications possible: high-definition videoconferencing, PC backup, telecommuting, premises surveillance.

DSL

- Extensions of copper infrastructures to offer basic broadband at low cost to carriers.
- Little potential for new revenue but an incremental way to hold off cable competitors.
- Applications possible: some voice and video, though mostly speed improvements over dial-up services.

— Jennifer Jones

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[**] Media comparison based on MSRPs of SAIT, LTO, AIT 3 and SDLT mid-range formats as featured in CDW, 1/23/03

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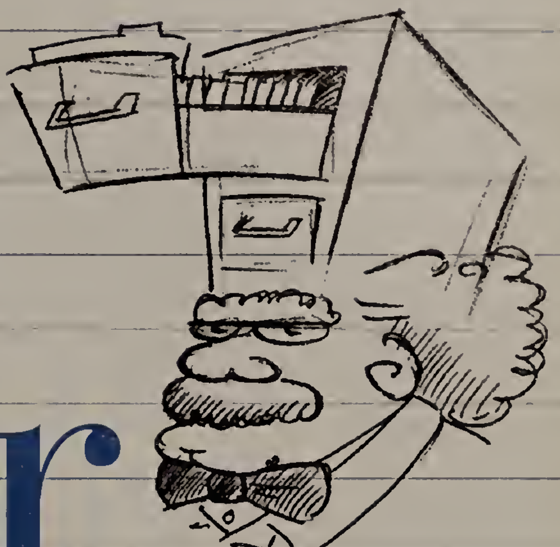
Storage gets smarter



Intelligence is moving into the storage fabric, but smart storage like this might only make sense for the biggest, most complex SANs.

■ BY JOANNE CUMMINGS

Remember when cutting storage costs and administrative headaches simply meant implementing a storage-area network? Those days are gone. Now storage heavyweights Brocade Communications Systems and Cisco are pushing a new panacea — moving storage intelligence off SAN servers and storage devices and into the SAN fabric itself.

Although more intelligent SAN switches and appliances promise easier management and better scalability, the trick for network executives will be to make the move cost-effective, users and analysts say.

"Not everyone will be able to take advantage of this move to put more storage intelligence in the SAN fabric," says Tom Barclay, lead developer and program manager for the TerraServer project, which provides interactive U.S. Geological Survey aerial maps to users via the Web. "It will make sense only for the biggest, most complex SANs."

Vendors agree. "You won't think about moving intelligence into the fabric until you have a very large SAN in place, with a very large amount of servers, disk drives and arrays," says Tom Buiocchi, marketing vice president at Brocade, which comes by its intelligent storage switch technology via the November 2002 acquisition of start-up Rhapsody Networks. "At that point, it becomes crucial."

The key is making sure that not only are you saving management costs, but that you move the right applications to the fabric and that you can recoup your investment in other intelligent devices within the SAN.

How it works

In traditional SANs, the intelligence necessary to perform key storage applications such as virtualization, snapshot copying, data replication and disk mirroring are performed primarily at the host, or server, level.

This means that to implement virtualization, in which servers view all enterprise storage devices as one large pool of storage, the virtualization software must run on every server.

"Say I have 100 servers across my company, and 25 are from Dell running NT, 25 are from Sun, 25 are from IBM, and 25 are from HP," Buiocchi says. "If I want to do virtualization today, typically I buy software and load it on all my servers." That's 100 licenses, with some for NT, some for Solaris and so on, he says.

The result is 100 management touch points for the storage administrator, who needs to track and maintain what the servers are running. But what if you could move that same piece of software off those 100 servers and on to one or two SAN switches?

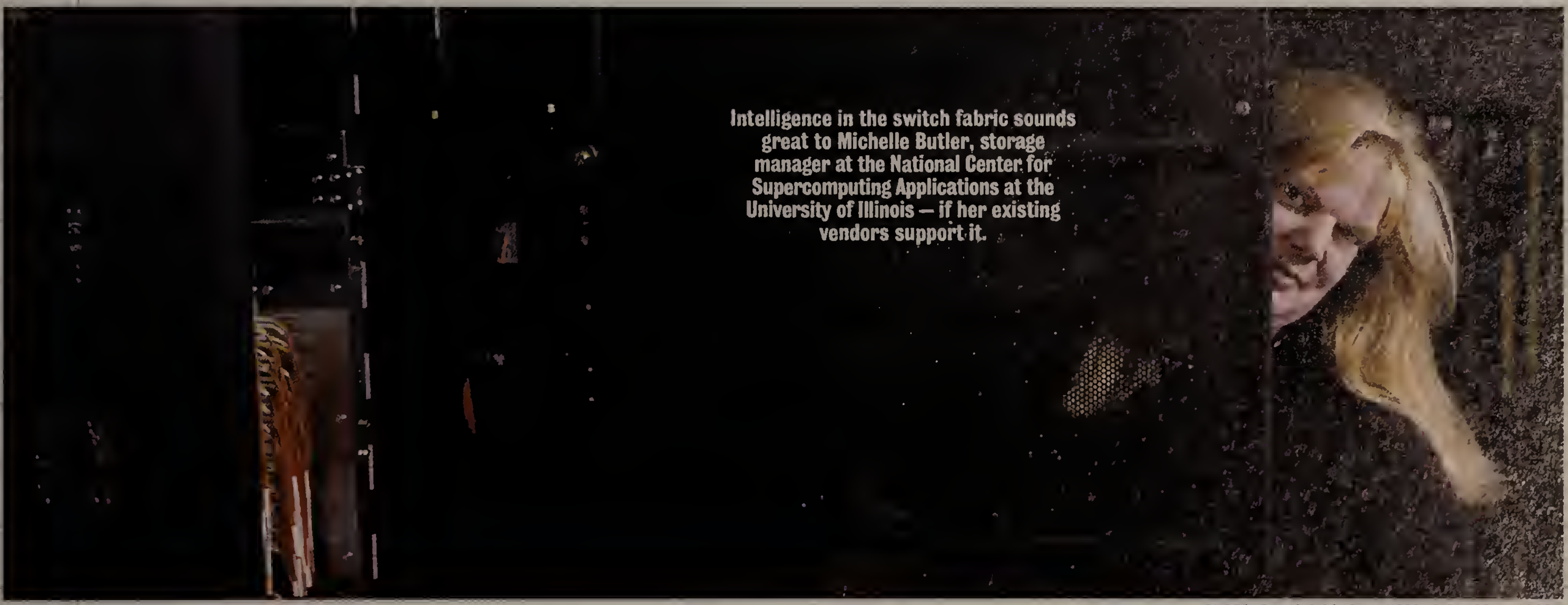
"It's essentially the same software customized to run on a switch as opposed to a server," he says. "And now you've reduced that management toll to one or two touch points."

You've also opened up the storage to gain a many-to-many relationship, analysts say. "Usually, when storage is tied to the server or host, SAN users with access to that host can reach only the one storage device attached there," says David Hill, vice president of storage research at Aberdeen Group. "But when you move that functionality out to the switch, now many users have access to many hosts and storage devices. It scales up the storage environment."

Make the move judicious

While the virtualization scenario above seems to make sense, other types of storage intelligence should never move to the fabric. "Server failover and multi-pathing will always run on the server. That's software that says, 'Hey, I tried to write some data to this switch but that switch is dead. I need to write it across another switch so it gets down to the storage.' That software has to run on the server," Buiocchi says. "The same goes for disk caching and RAID functionality. That needs to run very close to the disk drives in the array, so that's going to stay there."

It also depends on the granularity of what you're managing, Hill says. "If I have a tape library, and I want to capture information about its health and how that particular unit is performing, that's separate from the management

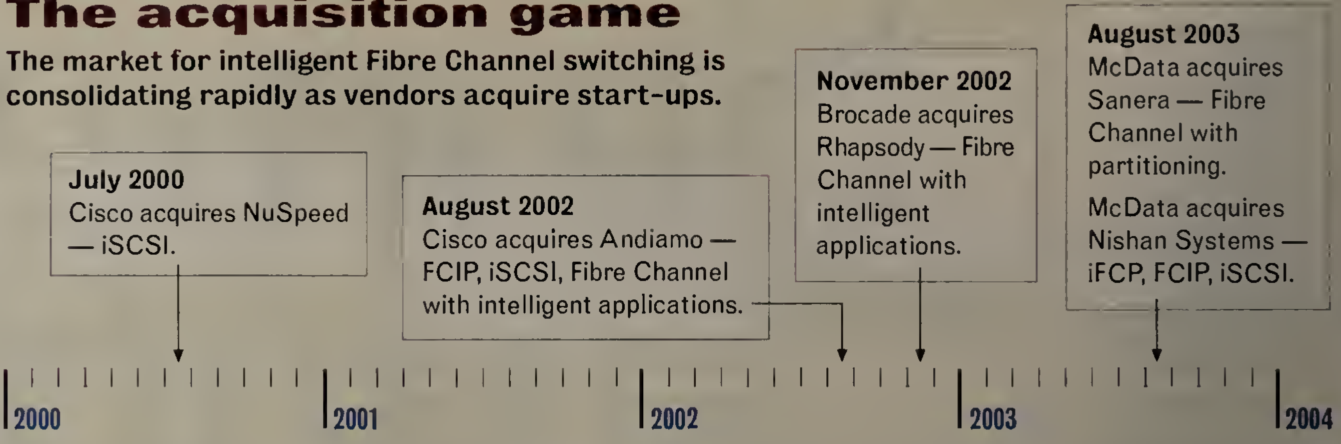


Intelligence in the switch fabric sounds great to Michelle Butler, storage manager at the National Center for Supercomputing Applications at the University of Illinois — if her existing vendors support it.

PHOTO DAVID RIECKS ILLUSTRATION TOM NORTON

The acquisition game

The market for intelligent Fibre Channel switching is consolidating rapidly as vendors acquire start-ups.



July 2000
Cisco acquires NuSpeed — iSCSI.

August 2002
Cisco acquires Andiamo — FCIP, iSCSI, Fibre Channel with intelligent applications.

November 2002
Brocade acquires Rhapsody — Fibre Channel with intelligent applications.

August 2003
McData acquires Sanera — Fibre Channel with partitioning.
McData acquires Nishan Systems — iFCP, FCIP, iSCSI.

of the actual data that goes onto it. It's very local to the particular device, tape drive, library or disk drive. That's the stuff that won't move to the network."

Dave Uvelli, tape library program manager at Advanced Digital Information, a leading tape library vendor, agrees. "There are lots of things we do at the tape library level that could never be moved to the switch. We can tell you if a tape drive is full or not functioning properly. There's no way a switch vendor can possibly manage that complexity from within the network," he says.

Hill says moving intelligence to the network is sensible only for "big picture" items. "Where data needs to be moved across multiple storage platforms or across many heterogeneous servers, it makes sense to centralize that function in the middle of the network so you're isolated from the idiosyncrasies of 18 different servers and 41 different disks," he says.

Switch or appliance?

Once you decide to move intelligence to the SAN fabric, you need to make sure the implementation you choose is tuned for the highest performance and scalability, vendors say. Cisco, with its MDS 9000 Series switches (based on technology gained through its purchase last summer of start-up Andiamo Systems), and Brocade, with its SilkWorm Fabric Application Platform, promise the switches are optimized to run intelligent applications through newly created ASICs and firmware. Brocade's switches are scheduled to debut by year-end for as-yet-undetermined prices. The Cisco MDS 9000 family system pricing starts at $30,000 and is scheduled to be available in the fourth quarter this year.

Using a storage appliance (such as those from DataCore Software, FalconStor Software and HP) to gain the same flexibility and network-based intelligence adds too great a performance hit, Buiocchi says. "It's basically adding software to a PC, but all of the PCI buses and internals of a PC are not optimized for storage applications, and you end up introducing latencies," he says.

Genevieve Sullivan, marketing manager within HP's storage software division, disagrees. "It's not an either/or situation when it comes to appliances or switches," she says. While HP offers its Continuous Access Storage Appliance for adding virtualization and other intelligent capabilities to the storage fabric, it is working to move the CASA functionality to Brocade's switch.

"There's a place for both," she says. "It's up to customers to decide what they need in terms of functionality and other factors."

For example, if three appliances cost less than one intelligent switch that can handle the functionality of those three appliances, maybe it makes sense to keep the appliances, especially if the administrative burden and the performance need is not too great. "But each organization is different," she says.

Aberdeen's Hill says the appliance/switch debate is pointless. "Either way will work, and you just have to gauge your environment," he says. "Even if there's a little inefficiency with an appliance, it may not matter because before you reach its physical limits, something else in the SAN may become the bottleneck. It may work fast enough for all you need to do and for the applications you have."

What to Ask?

Questions for your intelligent storage switch vendors

- What vendors have you partnered with, or do you plan on partnering with to port storage software applications to your switch platform?
- Will I be locked in once I move storage applications to the fabric, or can I backtrack or move to something new?
- How much is this going to cost?
- Will this new intelligent switch interact seamlessly with the less-intelligent switches in my SAN, or do I need to upgrade every switch at once?
- How future-proof is this switch? Will it be able to support iSCSI in addition to Fibre Channel, for instance?

Look at partnerships

Users would be wiser to pay attention to how the intelligence is implemented in the fabric.

"The relationships with the applications and disk vendors are what would sell it to us," says Michelle Butler, technical program manager in charge of storage at the National Center for Supercomputing Applications on the University of Illinois campus in Champaign-Urbana. Butler oversees three SAN fabrics, the largest of which uses four Brocade SilkWorm 12000 Core Fabric Switches, 937 Itanium 2-based servers and a multi-vendor hodgepodge of disks and arrays, all supporting more than 230 terabytes of storage.

"Moving some intelligence into the switch fabric and being able to host out some of this data without a smart server on the end would be fantastic," Butler says. "You wouldn't have to spend so much money on hardware and setup and resources. But I'd like to see what it actually works with. If it doesn't support my current vendors, it's not really worth the move."

Cisco and Brocade each have announced partnerships with EMC and Veritas Software, while Brocade also works with HP's CASA group. And both vendors say they also intend to increase the number of partners.

"But EMC and Veritas are the most expensive software and the most expensive hardware out there," Butler says. "If it could work with what I have — Serial ATA, LSI disks and Data Direct disks — that would be the deciding factor."

TerraServer's Barclay says functionality and investment need to be played off one another. "You have to fight the urge to get carried away with the technology and make sure that this is really something that makes sense in your environment," he says. "Especially if everything is working today, I'm leery of moving more intelligence into the network because there are a lot of places to blow it, and it's not like you can go back easily. Once it's there, you're stuck. And if it doesn't work, you're touching it every day."

Because the fabric is so critical to his storage network, Barclay says he'd be sure that whatever he did in the switch could fail over easily to a more traditional server-based solution. "So I'd have it in both places, but then, what's the point? You're not really saving anything," he says.

Butler says she's taking a wait-and-see stance. "Right now, we're looking at this as a nice-to-have, but something that's not that critical," she says. "But in a couple of years, as our fabrics grow and change, it will become a must-have. But by then, it should be clearer if and how it will fit with us."

Cummings is a freelance writer in North Andover, Mass. She can be reached at jocummings@comcast.net.

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Real-time collaboration — for real!

Instant messaging and Web conferences are turning real-time collaboration into an enterprise staple.

BY CHRISTINE PEREY

Real-time collaboration is a hot topic again. This time, it seems, the buzz has substance.

Analysts describe a dramatic expansion of audio and videoconferences, e-meetings, instant messaging and other real-time collaborative applications among enterprise users. Meta Group indicates that Global 2000 knowledge workers will widely embrace real-time collaboration technologies during the next three years. Forrester Research reports that enterprise organizations plan to more than triple their use of online collaborative design tools within that same time frame.

Real-time collaboration is rising on the enterprise radar for three reasons. First, businesses are striving to be highly responsive while still reducing overhead associated with human resources. A "real-time enterprise" uses technology to identify opportunities and resolve obstacles. Web services and presence-detection systems that facilitate real-time collaboration are part of a real-time corporation.

What to Ask?

Questions for your real-time collaboration tool vendors

- What are your plans for supporting contextual collaboration?
- Will you support buddy lists based on your enterprise instant-messaging technology platform or a public instant-messaging service?
- For what operating systems will you provide collaboration support?
- Do you currently or are you planning to support voice and video over IP as part of your collaborative platform?

The second driver is instant messaging, coming of age in the workplace. Having an easy to use "dashboard" for performing rapid inquiries reduces the real and perceived barriers between people and access to mission-critical information. Ferris Research has found that once people master instant messaging, they are more inclined to adopt other forms of real-time collaboration.

Finally, Microsoft has designated real-time communication and collaboration as key initiatives in its current fiscal year, ending June 30, 2004. Although Microsoft isn't the real-time collaboration market leader (IBM holds that honor with its Lotus Instant Messaging and Web Conferencing software), the flexing of its marketing muscle throws attention at these technologies.

Stand-alone collaboration

Use of Web conferencing services, such as WebEx from WebEx Communications, is a reliable indicator of the adoption of one category of real-time collaboration technology — the stand-alone collaboration application. Videoconferencing, which has experienced a significant 5% to 10% increase in use worldwide during the past year, and instant messaging are other examples in this category.

With these tools, a user must launch a separate application or, in the case of Web or videoconferencing, must use previously scheduled sessions. That's a potential downside. "People don't instinctively want to stop what they're doing in the middle of their workflow and start 'collaborating,'" says Chris Piche, founder and president of Eyeball Networks, a provider of IP-based audio and videoconferencing software.

Still, many early adopters apparently are willing to make the effort. WebEx reports a 35% increase in enterprise use from the first to second quarter of 2003.

Contextual collaboration

A breakthrough in real-time collaboration is the emergence of contextual collaboration — collaboration initiated from within a productivity application or an enterprise portal. Contextual collaboration use and revenues are significantly more difficult to size than those for the stand-alone applications. For example, a Microsoft Exchange server and Windows Server 2003 license with Live Communication Server option and Office 11 productivity applications soon will permit real-time collaboration from a mouse click in PowerPoint or Word, but collaboration isn't the principle justification for these investments.

Examples of context-sensitive collaboration abound. IBM WebSphere and PeopleSoft Enterprise Portal are two tools that can create portals with presence-publishing and monitoring capabilities. When linked with an enterprise instant-messaging registration server (or a public instant-messaging service provider) users on these portals can see the names and states of others.

"We believe that the real-time collaboration should be integrated into horizontal as well as vertical applications. Users will get the most impact when collaboration is part of their workflow," says David Gurle, global head of collaboration services at Reuters in New York. Reuters is integrating real-time collaboration and conferencing functionality (such as application sharing and instant messaging) into its 3000Xtra premium information service to foster workflow.

Contextual collaboration is enabled directly by a vendor, as in case of IBM's portal platform and Microsoft's portal and productivity tools; or through middleware, such as that offered by Ikimbo; or plug-ins, such as those offered by Advanced Reality and others. In a joint development with business process management vendor MetaStorm, Ikimbo Agenda enables real-time collaboration and instant messaging among groups of people responsible for different mission-critical processes.

The current generation of contextual collaboration technology relies primarily on proprietary hooks and APIs. Ratification and adoption of industry standards such as Session Initiation Protocol and SIP for Instant Messaging and Presence Leveraging Extensions will reduce significantly the time involved to integrate real-time collaboration capabilities into third-party applications. IBM and Microsoft say they'll support SIP, but proprietary mechanisms remain important in the collaboration platforms released to date.

Several other challenges remain as well. Most significantly, companies need an integrated and automated way to record and audit collaborative sessions to ensure regulatory, and corporate policy, compliance. They also need a way of establishing sessions across firewalls and network address translation devices when an individual's IP address is hidden.

And there are questions of cost. Pilot programs and trials do not accurately reflect the final total cost of ownership for real-time collaboration, and until companies can predict the impact implementations will have on their budgets, moving ahead will be difficult.

Despite these obstacles, real-time collaboration holds the potential to accelerate business decisions. Enterprise use certainly will continue growing during the next 12 months.

Perey, president of Perey Research & Consulting in Placerville, Calif., which specializes in rich media collaboration and communications. She is also a member of the Network World Global Test Alliance. She can be reached at cperey@perey.com.

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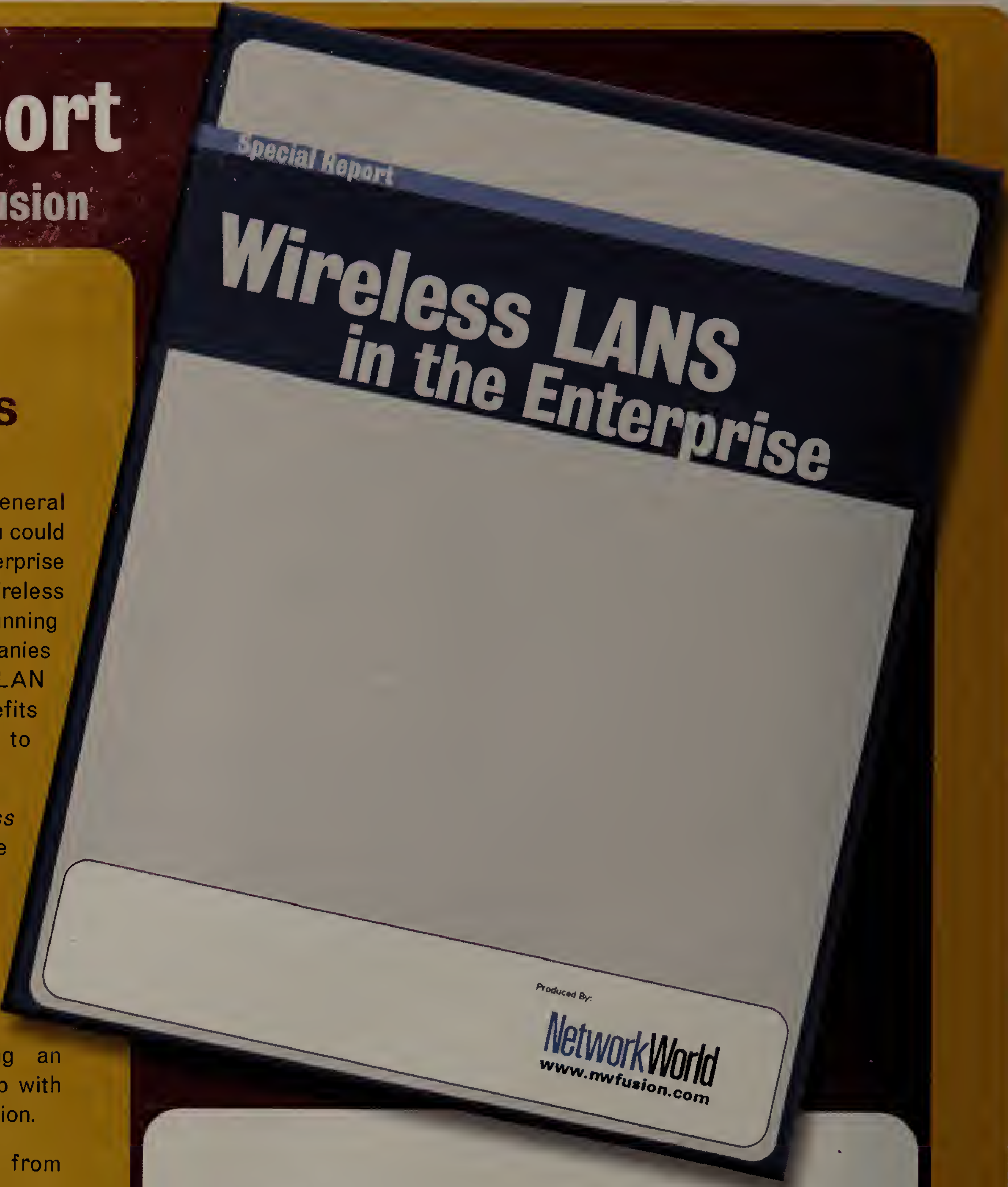

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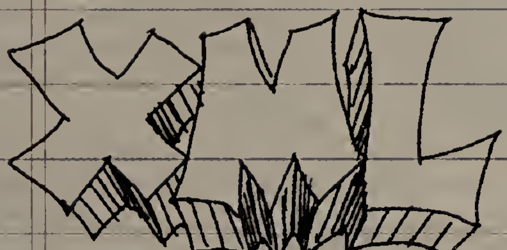
Resurrecting the distributed app model

The service-oriented architecture promises to succeed where others have failed in building a network-friendly, reusable app architecture.

■ **BY JOHN FONTANA**



and Web services are emitting a singsong chime these days, humming the letters S-O-A. Service-oriented architecture is in the air.

SOA is the latest name for an applications architecture for sharing and reusing code. With today's SOA, applications are built (or retrofitted) with standard interfaces most often based on XML and its derivatives: Simple Object Access Protocol (SOAP) and Web Services Description Language. SOA also defines how those services are located, executed, managed, monitored and secured.

For example, a tax calculator service could be used by shipping, sales and purchasing systems instead of writing, rewriting and updating code within each application to calculate tax. Credit check and fraud "services" could be integrated into a workflow for processing a loan. A purchasing system could be broken into a dozen services that could be used to support other business processes.

Still, SOA is an old concept that is generating new buzz, thanks to the advent of Web services and its promise of open, standards-based interfaces.

"SOA is probably a real nifty marketing term," says John Studdard, CTO for Lydian Trust, a financial services company in Palm Beach Gardens, Fla. "We call it core services. It is a loosely coupled Web services architecture where things can run asynchronously. You have a bunch of disparate services, and you can bring all those services together and call it an application." The company runs about 20 core services that are advertised in a registry and called via a URL to perform specific tasks or business processes — such as credit checks — as part of an automated workflow to support loan processing.

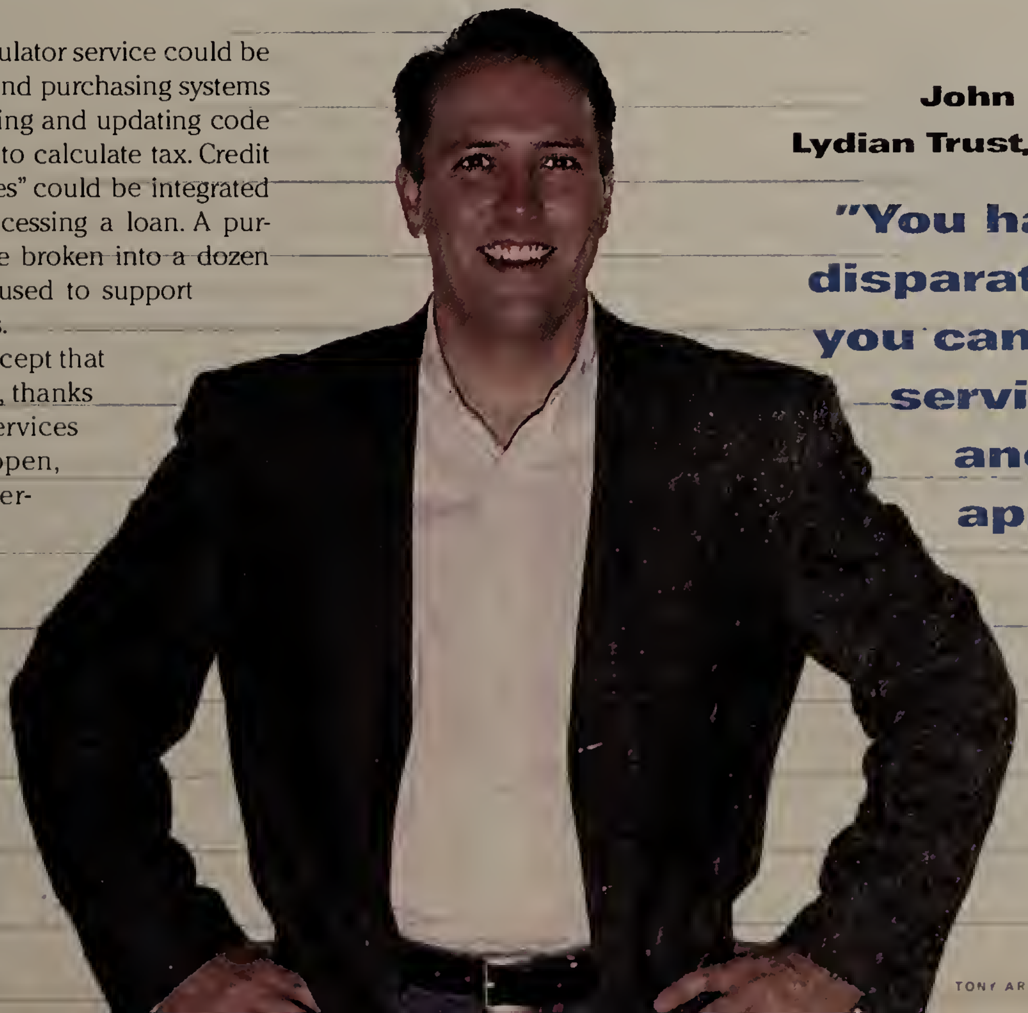
But in fact, an SOA doesn't require Web services. It only makes it more flexible while easing the sharing of services among multiple clients. The lack of those two characteristics caused other SOA efforts to fizzle — most recently the Common Object Request Broker Architecture (CORBA) and Distributed Component Object Model (DCOM).

"The key feature of an SOA is extreme flexibility," says Anne Thomas Manes, research director for application platform strategies at Burton Group. "What you want to do is make all your different application systems act as one huge virtual application that has full access to all the different capabilities in all the different applications systems."

Manes says that is in contrast to traditional application systems. "Today, you have stove pipes in which there is one application, and that application encompasses all its business logic, and no other application in your business has access to that stuff, and so the only way to get to it is to go through that specific application," she says.

Because the SOA is the step beyond point-to-point integration using Web services, it promises easier ad hoc integration of many services while minimizing the typical integration headaches of distributed computing. With an SOA, services can reuse existing software, slash IT administration costs, simplify software upgrades and ease application integration with business partners. And an SOA will run on existing IP-based networks. Additional infrastructure, such as XML traffic accelerators or load balancing, are needed only when services become the dominant means for developing and deploying applications.

While an SOA's benefits are easy to digest, the concept still might be hard to swallow. Companies will have to determine what set of software functions are best converted into reusable network services, a process likely to set off political battles over ownership of data, applications and computing resources. Executives must be sold on the SOA concept, which has a poor track record. Also, Web services standards for reliable messaging, security, management and workflow are not completed



TONY ARRUZA

John Studdard, CTO at Lydian Trust, gives his take on SOA:

"You have a bunch of disparate services, and you can bring all those services together and call it an application."

and are required for an SOA to be considered enterprise-class.

Research firm ZapThink predicts such issues can be overcome and that SOAs will become the dominant distributed computing approach by 2006. By 2010, ZapThink expects 69% of the total enterprise software market to be service-oriented and that the overall market for products and services that support service orientation will be more than $98 billion.

> **"In CORBA, you had to change legacy applications to play, but with an SOA you don't change the back-end applications. You link them together."**
>
> **Mark Haynie, vice president of enterprise extensions, Micro Focus**

The third-try charm

But before the technology is relevant, companies have to choose the business processes they want to convert into services.

"The biggest issue will be looking at our business processes and what applications are tied to those business processes and really pulling out the functionality that can be shared," says Darrell Delahoussaye, portfolio manager for engineering, procurement and construction systems for Bechtel, which is headquartered in San Francisco. "That is a tough one because it requires quite a bit of investigation, and I can guarantee that there will be political issues."

Corporate executives also must be educated and convinced that a Web services SOA won't repeat past mistakes.

Experts say the big difference is that CORBA, DCOM and other approaches were rigid. The services and clients were tightly coupled and the technology proprietary. The services were broken into small, fine-grained bits that required lots of chatter between the client and the service to accomplish a single task.

"With an SOA you don't have to program all the pieces of the puzzle like you did with CORBA," says Jason Bloomberg, an analyst with ZapThink.

At the core of an SOA are three elements that define a networked service: a provider, a registry and a consumer. The provider is the application — although sometimes this application is little more than a snippet of code to perform a basic task, such as calculating sales tax. The provider sends descriptions about itself to the registry, such as information on what the application does and how to connect to it. The consumer (typically another application) uses the registry to discover the existence of various providers and then directly connects, or binds, to those providers.

SOAs are loosely coupled in that services can be connected on an ad hoc basis, and that services and clients can be changed independently of one another. The services have standards-based interfaces and are coarse-grained in that they provide a distinct service or business process, such as the tax calculator or issuing a purchase order.

"If you have a policy system or, say, 20 policy systems, and you don't know which ones you may end up using in a year, you build a policy service that does primarily what everybody needs," says Dmitry Tyomkin, enterprise architect for CNA Insurance in Chicago. "Behind the scenes the service may reroute the request to a legacy system, but tomorrow when we retire those legacy systems it will be transparent for the consumer, it won't need to change its code."

CNA Insurance, which was built through acquisitions, is in the first phase of an SOA to integrate various systems and applications so it can respond better to change and better serve its customers.

Tyomkin says a year's worth of work has taught him that the benefit of an SOA is best viewed from a business perspective.

"You look at your business needs and see how you can dissect your business processes to identify the reusable portions," Tyomkin says. "If you feel there is a significant demand for those processes then you are probably a good candidate for an SOA."

Build, don't buy

An SOA is something that is built, not bought as a software suite, according to experts. However, there are some key pieces of software that must be purchased. First are the development tools from BEA Systems, Borland Software, IBM, Microsoft and Sun to build native Web services applications or create interfaces for legacy applications.

There also are tools from vendors such as Acucorp, Fujitsu, Jacada and Micro Focus that help legacy programs written in languages such as COBOL adapt to an SOA.

"In CORBA, you had to change legacy applications to play, but with an SOA you don't change the back-end applications. You link them together," says Mark Haynie, vice president of enterprise extensions for Micro Focus.

What to Ask?

Questions for your Web services vendors

- Will my developers have to change their skills dramatically to design applications or retrofit applications to conform to the SOA model?
- How can I adapt my current middleware infrastructure to support an SOA as I am building it out in phases?
- What middleware infrastructure do I need above and beyond what I already have to support the increase in XML and SOAP traffic once services proliferate on my network?
- Why will your software be relevant in three years as a stand-alone piece of middleware and not just a feature of the platform services available from the major vendors such as IBM, Microsoft, Oracle or Sun?

Independent software vendors also are starting to add native Web services interfaces to their products from ERP systems to collaboration servers.

Another key element is SOAP servers, with the dominant variety today being Web application servers, although SOAP traffic can be carried by TCP/IP as easily as it can move over HTTP.

The SOA registry typically is supported by Universal, Description, Discovery and Integration (UDDI), a Web services protocol. A UDDI registry, sort of a Yellow Pages of services, lets application components be easily found, called and reused instead of being hard-wired together. Companies such as Fujitsu, IBM, Microsoft and Novell offer UDDI registries, as do smaller vendors such as Flashline and LogicLibrary. The latter also add features to help developers create, manage and monitor a collection of services.

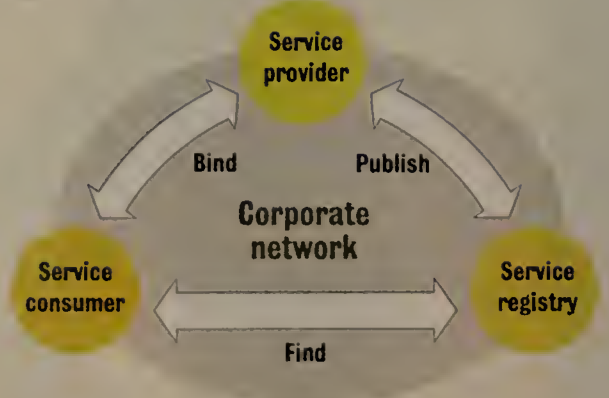
However, a full-fledged SOA is not just about developing applications as services. Standards for transactional messaging, security, workflow and management to ensure scalability and reliability are needed but are still under development, and in some cases competing protocols are slowing progress. Infrastructure upgrades to middleware also will be needed to handle the increase in XML traffic once services become prevalent.

A crowd of specialized vendors offer to fill those gaps with everything from message control systems, management platforms and XML traffic accelerators. These vendors include AmberPoint, Actional, Blue Titan, Cape Clear, Confluent, DataPower, Digital Evolution, Infravio, The Mind Electric, Sarvega, SeeBeyond, Sonic Software, Systinet, Talking Blocks, Vordel and Westbridge Technology.

"The SOA is an evolutionary step in the adoption of Web services," says Tyson Hartman, a technology fellow and director of .Net solutions for consulting firm Avanade. The long-term benefit is not only easier integration, he says, but a logical method for "deploying a set of services through their lifetime on the network." ■

The heart of an SOA

A service-oriented architecture defines how all or part of an application is made available as a service on a network. The service application — or service provider — must publish its features and network address in a registry where a consumer (a client device or another application) can find it and bind to the service.



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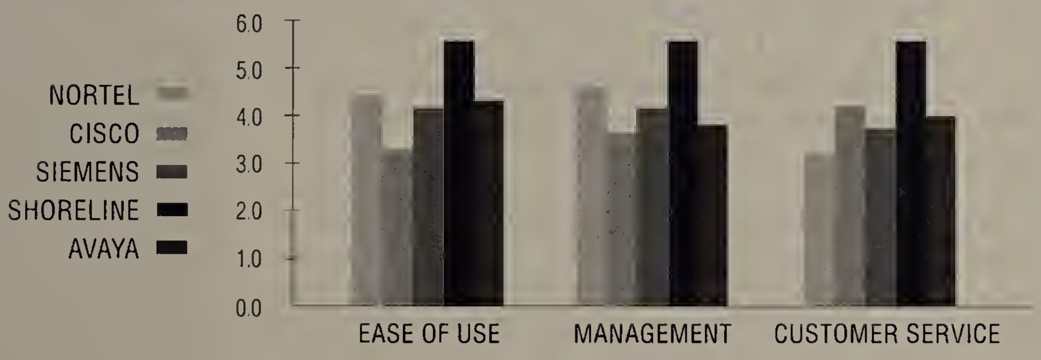

*Nemertes Research, Implementing IP Telephony Report, July 2003
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SEAMLESS ENTERPRISE MOBILITY

The Convergence of WiFi and 3G

These days, work doesn't stop at the office door.

As the pace of business accelerates to a 24/7 global sprint, so too does the demand for seamless access to valuable corporate data. This demand could come from a sales associate that needs access to a database at the home office in order to close a deal. Or, it could come from a technician out in the field who needs access to complex data or schematics to repair equipment. But as users increasingly push the boundaries of corporate information access, it becomes evident that informed executives will integrate mobile access options to create comprehensive solutions through seamless roaming.

By understanding how WiFi can be integrated with 3G mobile high-speed data (MHSD) networks, enterprises can extend its effectiveness over a wider area and increase the business value of mobile data. Instead of searching for a WiFi facility, mobile workers can have uninterrupted high-speed, "always-on" data connections. This "wide-area" approach to MHSD networking not only enables higher productivity, but it can support smart new business processes that put staff closer to customers — with essential tools and information right at hand.

Why Integrate WiFi/WLAN and 3G Technologies?

To begin with, WiFi networks have a limited range — generally around 300 feet, although it varies by equipment manufacturer. This is because WiFi networks were initially designed to extend enterprise networks without the burdensome cabling of fixed LANs, which is why they're also known as wireless LANs or WLANs. Now, however, WiFi is used for more than wireless high-speed data on company premises. A new breed of operator, known as wireless Internet service providers (WISPs), is using WLAN standard IEEE 802.11b to extend broadband access to public hot spots, such as airports, hotels, conference centers and cafes.

Despite this expansion in usage, WiFi's limited range makes it impractical as a technical and economic alternative to 3G technologies for ubiquitous wide area coverage. And when you're concerned about security, 3G is the way to go. 3G networks — unlike WiFi — use inherently secure 'spread spectrum' technology, which creates highly secure wireless air links through sophisticated coding and algorithms. 3G technologies also authenticate, or validate the users accessing the system. As a result, businesses that seamlessly integrate these two types of mobile technology will gain greatest advantage from mobile data solutions — just as they gain more power and convenience by integrating wireline LANs and WANs.

The greatest benefit comes from expanded coverage. By integrating WiFi networks with 3G resources, telecommunications operators can extend mobile high-speed access, in more locations, faster. Many mobile professionals already have IEEE 802.11b-enabled laptops and personal digital assistants (PDAs) that they use in WiFi hot spots. Integrated 3G mobile solutions leverage these existing locations — and extend them by giving end users the ability to roam seamlessly across the wider area supported by 3G networks. Users won't even notice the switch between the two technologies — they will experience one continual application session. Lucent uses an IETF protocol called Mobile IP to make these handoffs seamless.

Integrating WiFi and 3G technologies can reap some rich business rewards, including:

General Access to Intranet Resources. A great deal of valuable information resides on company intranets; integrating WiFi and 3G means that employees can access that data anytime, anywhere. As a result, workers can save time and increase productivity.

Vertical and Enterprise Applications. Many professionals in areas such as field sales and service, healthcare, real estate and finance require easy, portable access to applications, both on the corporate premises — best achieved by the company's wireless LAN — and off premises — where 3G technology works best.

Productivity Improvements. Continuous access to mission critical data presents a valuable opportunity for businesses to gain a competitive edge. For example, fast access to product information and part numbers can speed the sales and order processes and increase customer satisfaction.

The bottom line is giving businesses the ability to securely access mission critical data anytime, anywhere — and any technology that helps corporations do that is a true business enabler. There are other interoperability protocols out there, but Lucent backs Mobile IP for some very important reasons: It enables WLAN and 3G networks to work together with minimal changes, and keeps the two technically independent; it can be extended to wireline networks; and it's an IP-based, data-centric solution.

Continual network service was once a dream, but with new services, range and security enabled by 3G, along with the ability to seamlessly roam among WLANs and WiFi hot spots, companies can make it a reality.

HOW MOBILE IP WORKS

This IETF protocol, defined in RFC3344, enables mobility at the network layer — and allows a mobile device, such as a laptop or PDA, to change its location without the need to restart applications or terminate and re-establish an ongoing connection.

To gain the benefits of the Mobile IP protocol, end users must install an appropriate mobile "client" onto the data devices they will use. Then they simply log into this software using their chosen passwords. After activating the session, users will be able to move from one area of coverage to another, or to a different system, with no noticeable change in service other than a slight momentary pause.

For example, a sales professional on the road could check his email on a WLAN at a cafe offering WiFi access and learn his client is ready to meet, twenty miles away. During the meeting, he is able to access his client's data and pricing information via 3G coverage and close the deal on the spot, all without interrupting the data session.

When it comes to setting up an integrated solution, 3G architectures remain unchanged by the introduction of WiFi/WLAN access. When using Mobile IP, the integrated WLAN solution includes two additional elements in a mobile operator's network: a Mobile IP Home Agent (HA) and a Foreign Agent (FA). The HA is a router located on a mobile node's home network that maintains the current location for each departed mobile node and tunnels the received packets for the mobile node to its current location. The FA router resides on the visited network of a mobile node (either WLAN/WiFi hot spot or 3G network) and supports the registration of the mobile node, upon attachment, and enables the mobility process by co-operating with the Home Agent.

Even when applications do not require seamless connectivity, the integration of WiFi/WLAN and 3G offers valuable benefits for the user experience. Mobile professionals who use these solutions are never required to know the type of coverage that is delivered in each location — and whether it's going to change. The Mobile IP client hides the complexity, making the user experience simple and seamless.

For more information on these technologies and a FREE downloadable white paper on seamless roaming, visit Lucent Technologies' online Resource Center at www.lucent.com/solutions/3GandWiFi

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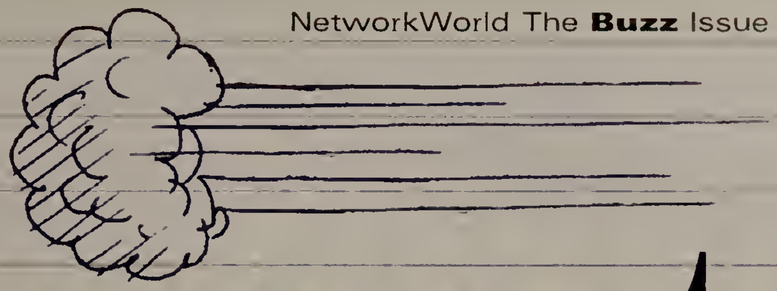

Ultimate mobility

Wi-Fi is the rage today, but the real mobile story lies in the convergence of multiple network types, application persistence and multi-modal devices.

■ BY TERRY SWEENEY

You wake up and, after sufficient amounts of caffeine, turn on your mobile network device of choice. Five e-mails grace your in-box, three of them urgent. A quick glance at your workgroup buddy list reveals your boss is already in the office, but the icon next to her name indicates she doesn't want calls. Your calendaring application shows a customer meeting at 9 a.m., so you tap the "Today" icon and an alert goes out to your staff and colleagues that you'll be out of the office till late morning.

Later, arriving for your appointment, you finish a voice mail to a friend about basketball tickets. Your mobile device, detecting your rights on the customer's Wi-Fi network, seamlessly moves the call from the your cellular network to the wireless LAN. You don't get dinged for the roaming, thanks to the chip-level authentication your mobile device uses and the corporate roaming agreement. When your meeting starts, your mobile device knows not to ring audibly, although color-coded instant messages might pop up.

Cool, yes. Feasible, no. You've got all the pieces at your disposal and can use some in combination today, but the applications, the devices and the network infrastructure are not yet agile enough to support such a connected user. Such convergence is at least three years away, analysts and users estimate.

As George Surdu, director of IT infrastructure for Ford Motor in Detroit, says: "We've got it all — Wi-Fi, bar-code scanners, cell phones, PDAs — but it's tough plugging it all together."

From MAN and LAN to WLAN

Disparate wireless networks likely will come together before convergence at the application and device levels.

In today's wireless WAN world, AT&T Wireless and Cingular could support roaming between their networks, which rely on Time Division Multiple Access (TDMA) technology. But they couldn't offer roaming between their networks and the Code Division Multiple Access (CDMA)-based network of either Sprint PCS or Verizon Wireless. The TDMA and CDMA systems send and receive information differently. But as silicon changes and multi-mode phones become available — already happening in Europe and expected stateside next year — users will be able to roam between TDMA and CDMA networks worldwide. Carrier adoption of the International Telecommunication Union 3G digital cellular technology also will facilitate such roaming. Besides being able to handle TDMA and CDMA interfaces, 3G networks can carry data at speeds ranging from 128K to 2M bit/sec. U.S. carriers are expected to begin 3G rollouts next year.

Cellular providers, ever keen to exploit a revenue opportunity in an otherwise flat commodity market, also now are focusing outside their traditional WAN purview. Most are trying to figure out how to get into the Wi-Fi hot-spot business so their users will be able to tap the cellular network for voice calls and high-speed hot-spot access to corporate resources or the Internet. IEEE 802.11-based hot spots offer access at rates of 11M or 54M bit/sec, depending on what version of the wireless Ethernet standard is supported.

"We view 3G and Wi-Fi as complementary," says Bill Stone, executive director of technology development for Verizon Wireless. To that end, the carrier in August said it would work with hot-spot builder Wayport to provide Verizon users with access to hundreds of hot spots nationwide. Sprint PCS cut a similar deal with Wayport and Airpath Wireless for 2,100 hot spots by year-end.

Hot spots might work well for itinerant users, but they will remain as access points for fixed data applications. Those users cannot expect to walk, or drive, out of hot-spot range and have the Wi-Fi provider hand off their e-mail sessions to their cellular operators, for example. Neither the roaming nor the application persistence works.

For users, the application persistence seems to be the bigger of the two problems. Late last year, Sprint surveyed several of its users in healthcare, telemetry and transportation who said resoundingly that they need application persistence, not seamless roaming. "Those who needed to be able to move between 3G and Wi-Fi were few and very far between," says Wes Dittmer, senior director of business development for Sprint PCS.

The IETF's proposed Mobile IP (MIP) specification (RFC 2002) goes toward solving these problems. MIP will let users roam by giving them a fixed "home" IP address and a "care-of" address that changes at each point along their wireless trajectory. And while it might not provide for wireless persistence single-handedly, MIP will go a long way toward enabling it. While router vendors are working on their own versions, these

The converged mobile future

Convergence of wireless network, application and device types has begun, but likely won't produce fully persistent applications for at least three years, according to Gartner.

	2003	2004	2005	2006	2007
Technology	Wireless LAN	Wireless LAN	Multichannel access	Wireless LAN with VoIP	Wireless personal-area network
Application	Coverage extension	Messaging, corporate data	Multimodal information access	Converged voice services	Integrated enterprise architecture

will not likely be ready for deployment or widescale use for a few years. Again, many security issues arise over the discovery, registry and tunneling of the care-of address.

Mobilize those apps

The persistence/roaming isn't holding back deployment of applications such as e-mail, instant messaging — with or without presence — and Short Message Service (SMS) on wireless networks. Gartner says wireless messaging is today's fastest-growing enterprise wireless data application. The research firm predicts that mobile SMS and instant messaging will become a regular part of mobile communications in the next two years.

Other applications will move increasingly into the wireless realm, too. "For every vertical, there are two or three key applications that are essential to running the business and would benefit from mobilization," says Dan MacDonald, head vice president of Nokia Internet Communications. "Make it accessible and useable with small screens, and you've got a killer app."

Toward that end, Nokia in May acquired Eizel Technologies, whose software platform "mobilizes" applications for the wireless environment, MacDonald says. Other efforts to make business applications suitable for use over mobile networks include Motorola's Cellular Digital Packet Data standard that ported messaging and dispatch applications into the wireless realm.

Any presence-based application will require making signal availability more automated, says Dave Werezak, vice president of marketing for Research in Motion. If users have to keep resetting availability and presence data, then as a practical matter people won't use wireless applications. "But we can combine someone's location with presence and use data to say, 'If I'm not at my desk or am in this meeting room, consider me unavailable,'" he says, explaining that General Packet Radio Service (GPRS), a 3G cellular technique for sending short bursts of data such as e-mail and instant messages, might be one approach.

Because GPRS can be used on TDMA or CDMA networks, and presence is being built into handsets, "We could see it sooner rather than later," perhaps within the next few years, he adds.

Having the operating system on the device, as opposed to using an appliance, should make presence more widely available and convergent applications more real, says Mike Wehrs, director of technology and standards for Microsoft. The operating system deals with the network, as it does for the location-based E911 services mandated for cellular networks, rather than the user, he says. AT&T Wireless is demonstrating presence technology and is expected to offer a commercial service, although it hasn't set a date.

What to Ask?

Questions for your wireless network operators, mobile device vendors and application software providers

- How do you plan to merge wide-area cellular with local-area hot spots? Do you offer discounts and a single bill for roaming between them?
- Do you have the level of security we need integrated into your service/product, or will we have to layer it in on top ourselves?
- Will your wireless security architecture leverage our existing enterprise security infrastructure, or will we need to deploy yours or another vendor-/product-specific security infrastructure to support your wireless product/service?
- What are your plans to support the emerging IEEE 802.11 wireless Ethernet standards such as "a" and "i"?
- How well does your application deal with an intermittent network connection?
- What can you do to ensure important business applications, such as CRM, are ready for wireless networking or converted for easy use?
- How do you measure user downtime, and what processes do you have in place to support six-sigma level of commitment?
- Can you demonstrate the ability to protect handsets, call processing engines and gateways from security threats such as a virus or denial-of-service attack?
- What changes are you making at Level 1 support desks to handle the increased complexity around fault isolation on a converged network?
- What standard IP quality-of-service mechanisms have you deployed?

Recipe for clunky devices?

Chips might get smaller, less expensive and more sophisticated, but users still need the right mobile tools. As one analyst notes, convergence might help mobile users eliminate a PDA, cell phone, pager, laptop or PC card, but will never get them down to one device. Voice telephony can be integrated into anything, but data needs a larger display and keyboard than many mobile devices offer. Ask early users of the so-called wireless Web of a few years ago — they'll still likely gripe about slow downloads and crummy graphics.

Multi-mode chips that will handle functions like least-cost routing are most likely to go into PDAs first and high-end mobile phones, says Greg Collins, a director for Dell'Oro Group. "But frankly, we're not seeing a lot of integration on the chip side between Wi-Fi, GSM and TDMA," he says.

GSM is TDMA-based and a widely used digital cellular standard everywhere but North America. At least right now vendors want chips that combine DSL and Wi-Fi so they can provide landline and wireless connectivity from a single device, he adds.

Nokia's MacDonald is a bit more bullish, noting that the PC card is a transitional device. He says mobile phones with 3G, Wi-Fi and Bluetooth capabilities will be available within the next two years. Bluetooth, originated several years ago by Ericsson, IBM, Intel, Nokia and Toshiba, is a specification for so-called personal-area networks. Its signal has a short reach and enables connectivity among different wireless device types and networks on a more dynamic and personal level, for instance as a user progresses through a shopping mall. "It's only the early adopters who can stomach it right now to accomplish a lot of this," he adds. "It has to get simpler for the adoption to take off."

Nokia and others are watching to see how users receive the Mio8380, a mobile phone that plays music, sends e-mail and takes pictures. It's hardly revolutionary, but it is the first to use Microsoft's Smartphone 2002 operating system and Intel's PXA255 200-MHz processor. The phone will be available this fall in Europe for $600.

While the unit is more a consumer play, its ability to handle multiple applications of varying bandwidth requirements portends good things for enterprise users looking for a richer all-in-one or more-in-one device. And as the debut of Microsoft and Intel into the handset realm, it likely will force Ericsson, Motorola, Nokia and others to hasten their own convergence developments for business users.

RIM's Werezak says the industry can combine as many technology types into silicon as it likes, but for each different radio technology added to the chip, another antenna, code stack, software and electronics have to be added to the hardware.

"We anticipate a converged wireless handheld that would support WAN and Wi-Fi subscriptions, but it would be bigger, more expensive and have a shorter battery life than the BlackBerry or any other existing mobile device," he cautions.

So while convergence of wireless networks, applications and devices is still a few years out, customers, vendors and service providers all are focused on the potential.

Sweeney is a writer and editor in Los Angeles who has covered IT and networks for 20 years. He can reached at terry@tsweeney.com.

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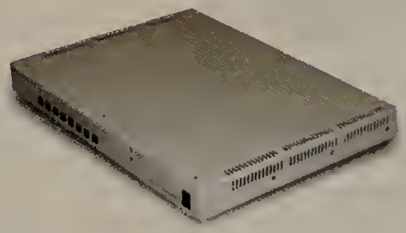

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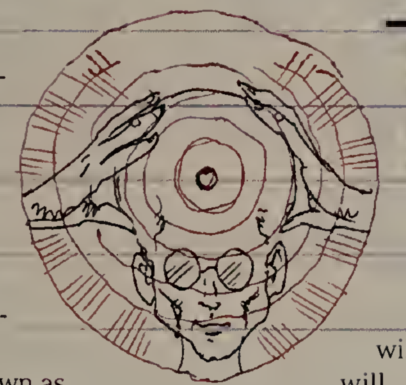
To data center utopia

Utility computing initiatives dominate product road maps, but so far no one vendor has delivered fully on the technology's promise.

BY DENISE DUBIE



They might use different buzzwords — adaptive, organic, on-demand — but just about every management, systems, server and storage vendor is focused on the same thing: bringing enterprise companies to data center nirvana.

In this glorious state, generally known as utility computing, hardware never would be over-provisioned, problem solving would be handled proactively rather than reactively, and minimal labor would be required to roll out new applications, provision servers and support users. Utility computing products run the gamut, from server and storage virtualization, vulnerability assessment, middleware integration and business process modeling to the umbrella of automated management. And vendors pitching the idea are as varied as IBM, Microsoft and Veritas Software.

But utility computing products still are immature, with no suite from a single vendor capable of delivering on the overall promise. Industry watchers don't expect to see data centers running entirely on the utility computing model for at least three to five years, and some say seven to 10 years is a more realistic expectation.

That leaves users to toy around with early products that provide some utility computing functions while closely watching developments and wondering if everything eventually will gel, as vendors propose it will. For example, at WeightWatchers.com, IT is automating server management and provisioning, but isn't adopting a utility computing model outright, says Mark McNamara, IT director at the New York company. "All the utility computing hype from the big hardware vendors is focused on virtualization. But the biggest challenge is managing the variety, complexity and frequency of change inherent to a multivendor infrastructure," he says.

Toward that end, WeightWatchers.com six months ago rolled out BladeLogic Operations Manager software to track configurations and changes across about 300 Compaq/HP servers in three data centers. "We need the ability to make any type of change across multiple platforms [by using administrators with] various skill levels, and we need a smooth migration path to get there," he says.

Four tenets of utility computing

McNamara touches on utility computing's must-haves. Vendors, analysts and corporate IT managers mostly agree that utility computing requires management and other technologies that centralize, integrate, virtualize and automate the IT infrastructure and the applications running on it. For enterprise data-center managers, this means rethinking the traditional approach to data-center management.

Adopting a utility computing model would require corporate IT departments to eliminate the network and systems management silos and standardize on integrated, automated management tools. They would need to bring in technologies that can provide centralized management, seamless integration across platforms, virtualized pools of network, server and storage resources, and intelligent automation that eliminates the need for hands-on management.

Strategic approaches

Considering all that utility computing entails, it is no surprise that systems management heavyweights HP and IBM offer the most comprehensive packages. Big Blue, which has beaten the utility computing drum since announcing its eLiza computing initiative in 2001, offers on-demand features in its Tivoli management software and WebSphere business integration middleware, across its database and server lines, and through its outsourcing arm, IBM Global Services.

Gartner and Forrester Research put HP in the lead in the race for utility computing, with its Adaptive Enterprise strategy, Utility Data Center services and OpenView management software products.

HP and IBM, and fellow server vendors Sun (through its N1 program) and Microsoft (with its Dynamic Systems Initiative), address utility computing through hardware and software.

This compares to companies such as BMC Software, Computer Associates and Micromuse, which have software-only approaches. Each vendor says it can manage an application based on its use of network, server and storage resources, and provide automated features and real-time business service impact analysis.

But the utility computing vision wasn't doable until newcomers such as BladeLogic and Opsware emerged about two years ago with automated data-center provisioning. In providing automated server and device provisioning, and automated application rollback features, these companies filled a gap in management products that didn't address change and configuration management across corporate data centers. That made these newcomers ripe for acquisition by the bigger vendors reaching to provide all-encompassing utility computing lines. IBM, Sun and Veritas, for example, all snatched up start-ups with automation technology.

The implementation challenge

Data center managers who want to benefit from the incremental integration, virtualization and automation features of utility computing should expect to have to work at it.

Such has been the case at EFW, a full-service electronics supplier using CA's Unicenter software to manage an on-demand network. EFW has had to document processes and build applications in customer-friendly formats, and deploy some hardware, says Harry Butler, support center manager at the Fort Worth, Texas, company. Butler chose to go the on-demand route when faced with managing the infrastructure that supports the fast-growing company (120% in the past three years) with the same size staff.

"On-demand computing is a challenge to set up, but it's very rewarding," Butler says. "It lets you provide more support with less resources and still maintain a high customer satisfaction level." ■

What to Ask?

Questions for your utility computing vendors

- Will adopting a utility computing model require changes to the hardware and software infrastructure? If yes, what needs to be changed? Will new hardware be required, will servers need to be consolidated, and will software need to be upgraded or integrated?
- Does the product virtualize storage, server, network and application resource pools to make the entire data center appear as one operating environment sharing those resources? Can it do so across multiple data centers?
- Can the product automate the provisioning of new servers and roll back applications to the previous versions if a software code or application performance error occurs?
- How does the product correlate business processes with application performance on the underlying infrastructure that supports those apps? And how much upfront manual configuration is required?
- Is policy-based management used in the product — meaning, will mission-critical applications get network, server, storage and other resources over other applications that have been assigned a lower priority?

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Western Telematic, Inc. (WTI) is an industry leader in designing, manufacturing and marketing of data connectivity solutions. WTI's current product offering includes the NetReach line of remote site management hardware. The products consist of cost-effective terminal server alternatives, Telnet and dial-up network power switches and secure modems for remote dial-up management. In 1975 long time company executive, David Morrison, took over as President. Mr. Morrison continues to successfully guide WTI through its cutting-edge commitment to research and development.

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Raising an RFID ruckus

BY STEVE ULFELDER

Radio frequency identification tags might make supply chains infinitely more manageable, but the privacy flap needs settling first.

It was a rough summer for radio frequency identification, the heir to the venerable bar code.

In July, privacy advocates crowed when Wal-Mart and Gillette canceled a planned trial of "smart shelves," which inform the supply chain when (and with what) they need to be restocked. "On June 6, I walked around and wiggled the smart shelf [in a Brockton, Mass., Wal-Mart, where the test was about to launch]. The next day, it was gone," proudly reports Katherine Albrecht, executive director of one of those groups — Consumers Against Supermarket Privacy Invasion and Numbering (CASPIAN).

A month later, CASPIAN called for a boycott of Gillette, darkly dubbing the RFID transceivers embedded in razor-blade packaging "Gillette spy chips." A Gillette spokesman dismisses the boycott, saying the company has no intention of tracking individual customers and their purchases.

Gillette also denies that the privacy groups had any influence on the decision to cancel the smart-shelf trial, as does Wal-Mart. They say the companies opted instead to focus their attention farther up the supply chain, at the palette and case levels. Clearly, though, groups such as CASPIAN have had a sobering effect on these companies and other businesses working to improve supply-chain management through RFID. And few industry watchers doubt that privacy-group pressure will force companies to examine the consumer-privacy ramifications of the technology and establish a code of conduct. Public protest also may slow RFID adoption by cautious companies.

However, not all the summer buzz around RFID was negative. While CASPIAN was making headlines with its Gillette boycott, Texas Instruments announced it had developed a tiny (22 mm circumference) RFID chip sturdy enough to survive the dry-cleaning process. And despite the smart-shelf volte-face (whatever its cause), Wal-Mart instructed top supply-chain partners to be RFID-ready at the case and pallet level (as opposed to the individual-item level) by January 2005.

What to Ask?

Questions for your RFID suppliers

- How much do your RFID tags cost, and how much will the price drop over the next 18 months?
- Do wireless LANs interfere with the scanning system?
- What is the price and form factor of your RFID readers? (Some have been deemed expensive and unwieldy.)
- How will the tags interface with and affect the enterprise network? (For example, are they compliant with American National Standard 256, the emerging vendor-independent RFID programming interface?)

RFID at work

That's a lot of excitement for a technology that was born during World War II and has been around in pretty much its present form for a decade. RFID transfers data wirelessly between a minuscule transceiver and a transponder, or "tag," that can be attached to just about anything — an item in a store, a shipping container, even livestock. Without human intervention, the tag and transponder can trigger actions, such as reordering from a supplier. Already, RFID is used in airport luggage-routing systems and highway toll collections.

For years, RFID's potential for dramatic supply-chain improvements has been clear. Because it rides radio waves, RFID doesn't require line-of-sight scanning as bar codes do (high-frequency RFID systems boast transmission ranges up to 90 feet). The great promise of RFID is to offer more granular, accurate information on product availability and to automate processes that are performed manually today.

Those radio waves are what concern privacy advocates, who want assurance that when a consumer buys a pack of Certs and slips them in her pocketbook, she won't be surreptitiously tracked by the government, the store or hackers.

Privacy is a recent concern; for years, cost held back RFID. The consensus is that the price of an RFID tag must sink to a penny before the technology is cost-effective at the grocery-store level (though it's already attractive for higher-margin items such as clothing).

Nailing down the price of an RFID tag is impossible today. Mark Roberti, editor of the online magazine RFID Journal, says 40 cents to $1 is the going rate in the real world. But Bob However, a partner at venture capital firm Advanced Technology Ventures who closely follows RFID, believes Gillette paid as little as six cents apiece for the 500 million tags it purchased from Alien Technology in a heavily subsidized deal meant to build market share in the nascent industry. Transportation company DHL, which plans to track its packages with Philips Semiconductor tags by late 2004, says it won't pay more than 20 cents each for the 1.5 billion tags it plans to use annually.

In any case, there's more to RFID than tagging every box of Bisquick. Already, the ROI is attractive at the pallet and carton level — where Wal-Mart is focusing. The Bentonville, Ark., company is committed to using RFID in its distribution centers by 2005 with its top 100 suppliers, the spokesman says, on each pallet and case. A year after that, the program will encompass all Wal-Mart suppliers.

The reason is simple: Already legendary for its logistics processes, Wal-Mart believes that jumping from bar codes to RFID "will be like going from the telegraph to the Internet," the spokesman says. "We move a lot of product," he adds (an understatement — Wal-Mart figures show that from January to June 2002, 2.5 billion containers passed through its 108 U.S. distribution centers), "and we think RFID will teach us a lot about the daily ebb and flow."

He won't comment on when RFID will make it to Wal-Mart shelves, which is what triggers the objections of privacy groups. CASPIAN's Albrecht says her bottom line is, "You absolutely cannot put these [tags] in products consumers are going to interact with."

Privacy first

Roberti says package-level RFID tags are a full decade away. In anticipation of protests such as CASPIAN's, he has long urged businesses to enact RFID privacy policies — and believes many corporations will do so in 2004. "This industry is immature," he says. "Nobody had Internet policies in 1994. Today, nobody's selling anything to consumers with RFID tags, so why would they have an RFID privacy policy?"

As it turns out, pressure from consumer privacy groups might bring about a win-win situation for RFID adopters; while they gradually implement the technology with suppliers, they can form cogent RFID privacy policies.

Ulfelder is a freelance writer in Southborough, Mass. He can be reached at sulfelder@charter.net.

Signature

Sign-Off

Industry murmurs

What emerging technologies are people starting to buzz over? We take a look at three.

■ BY BETH SCHULTZ

40G Ethernet, or beyond

So 10G Ethernet, standardized 15 months ago, is seeing but a whisper of deployment in enterprise networks and even less than that in carrier networks. But that's not stopping industry watchers from speculating on what speed to take the venerable LAN standard to next.

In May, a senior Cisco executive voiced his opinion that 40G bit/sec Ethernet could be technically feasible within two years. Doing 40G Ethernet, based on SONET technology, would be easier than doing the linear mathematical leap to 100G, said Luca Cafiero, general manager for switching, voice and storage at Cisco.

And in a recent interview, Raleigh Mann, manager of network operations at Industrial Light & Magic (ILM), said 40G is within reason for this San Rafael, Calif., movie post-production house. Coincident with a headquarters move planned for 2005, ILM is designing a network that would deliver 1G bit/sec connections to about 3,800 user machines, using multiple 10G links between each switching closet and a "very large mesh of 10G at the core for redundancy and performance." Mann anticipates close to 200 10G interconnects on the network and says he envisions 40G within the core and to some higher-density closets (see www.nwfusion.com, DocFinder: 7837).

Despite the murmurs, no one has yet initiated a "call for interest" (a formal IEEE process to ensure an idea is timely and interesting enough to pursue) on 40G, 100G or any other speed higher than 10G, says Bob Grow, chair of the IEEE 802.3 Working Group and a principal architect at Intel. "Another bump in speed has not been discussed, period," he says. "If anyone alludes to something, it's just that there is a future and that we'll eventually get around to it."

Rather, Grow says, recent calls for interest and projects have been focused on getting 10G better tuned to the enterprise market. That includes work on 10G over copper, over FDDI and, more complicated, Ethernet in the first mile (EFM), he adds.

Boosting Ethernet beyond 10G would be a big undertaking, one for which IEEE resources might not yet be available, Grow says. "We can only do so many projects and do them well. It makes sense to get [EFM] finished before undertaking another major project." With that, Grow doesn't anticipate the speed buzz getting any louder within the 802.3 working group until at least next year.

Route management

Seeing is believing. So say two network start-ups of a concept they call "route management" that is working users and industry watchers into a tizzy.

Route management, sometimes called route analytics, is not to be confused with the previously buzzy "route optimizers" or "router management" products. Route managers do not log into or manage routers, nor do they otherwise manipulate the routing function. Rather, these appliances, available from Packet Design and Ipsum Networks, silently "listen" to exchanges between routing protocols and then deliver a Layer 3 map of the routing paths. The map changes as the routes do — meaning, continuously.

Such easily attainable real-time visibility has never before been possible, says Adam Joffe, CTO at Sony Online Entertainment (SOE) in San Diego. SOE has been beta-testing one of the two route managers available — Packet Design's Route Explorer — for several months. Joffe calls the tool "very powerful," not just because of that real-time visibility but also because it shows the effect of a route change. "You can cross a link and see where the bits would go. So you can see the resiliency and redundancy," he says. "Network engineers can take that info and make changes."

Route Explorer 1.5 supports the Open Shortest Path First (OSPF) and Intermediate System-to-System (IS-IS) routing protocols. Border Gateway Protocol (BGP) and Cisco Enhanced Interior Gateway Routing Protocol (EIGRP) support is expected in the fourth quarter.

One Route Explorer appliance can support any size network, listening to any number of domains. The appliance costs $35,000 for up to 50 routers, with stair-step pricing up to 250 or more routers. The unlimited license version costs $75,000.

The other offering, Ipsum's Route Dynamics, supports OSPF, with BGP support coming later this year and IS-IS and EIGRP planned for next year. Route Dynamics lists at $50,000, which includes a Multi-Area Path Server, an IP Listener appliance and software. Like the Packet Design product, Route Dynamics can handle any size network; in this case, by adding IP Listeners, which cost about $5,000 for an additional 100 routers.

Network analysts herald these new products as fantastic planning tools. The real-time visual maps will make it much easier for users to configure, troubleshoot and manage IP networks, they say.

And that, Joffe adds, speaks directly to cost of managing complex router networks. "From my chair, it looks like a great purchase," he says.

XML switching appliances

Where there's a Web service, there ought to be an XML switch. Such is the growing buzz on how to deal with XML traffic. These so-called XML switches work at or near wire speeds to process XML messages, a task that can affect server processing power severely when done in server software. Sitting in front of Web or application servers, these dedicated devices handle tasks such as validating and logging XML traffic, translating XML dialects, prioritizing and routing XML traffic, and encrypting/decrypting data within an XML document.

One of the earliest market entrants, the XPE Switch from start-up Sarvega, secures, routes and prioritizes XML traffic. The switch understands XML tags and can prioritize certain transactions, such as a customer sales order. Meanwhile, other start-ups are zeroing in on more specific pieces of the XML processing problem. Appliances from Forum Systems, Reactivity and Westbridge Technology focus on security functions such as authentication, decryption and encryption.

Analysts, venture capitalists and early users have been bullish on these XML switches, perhaps because XML traffic is expected to grow significantly in the next few years. By 2006, ZapThink says, XML will account for 25% of network traffic, up from 2% today.

XML switching appliances remain the purview of these and other start-ups, including Conformative Systems, DataPower Technology and Xbridge Software. However, industry watchers suspect established network vendors soon will want to incorporate such functionality into their product lines. Cisco and Nortel come to mind as vendors closely listening to this buzz. ■

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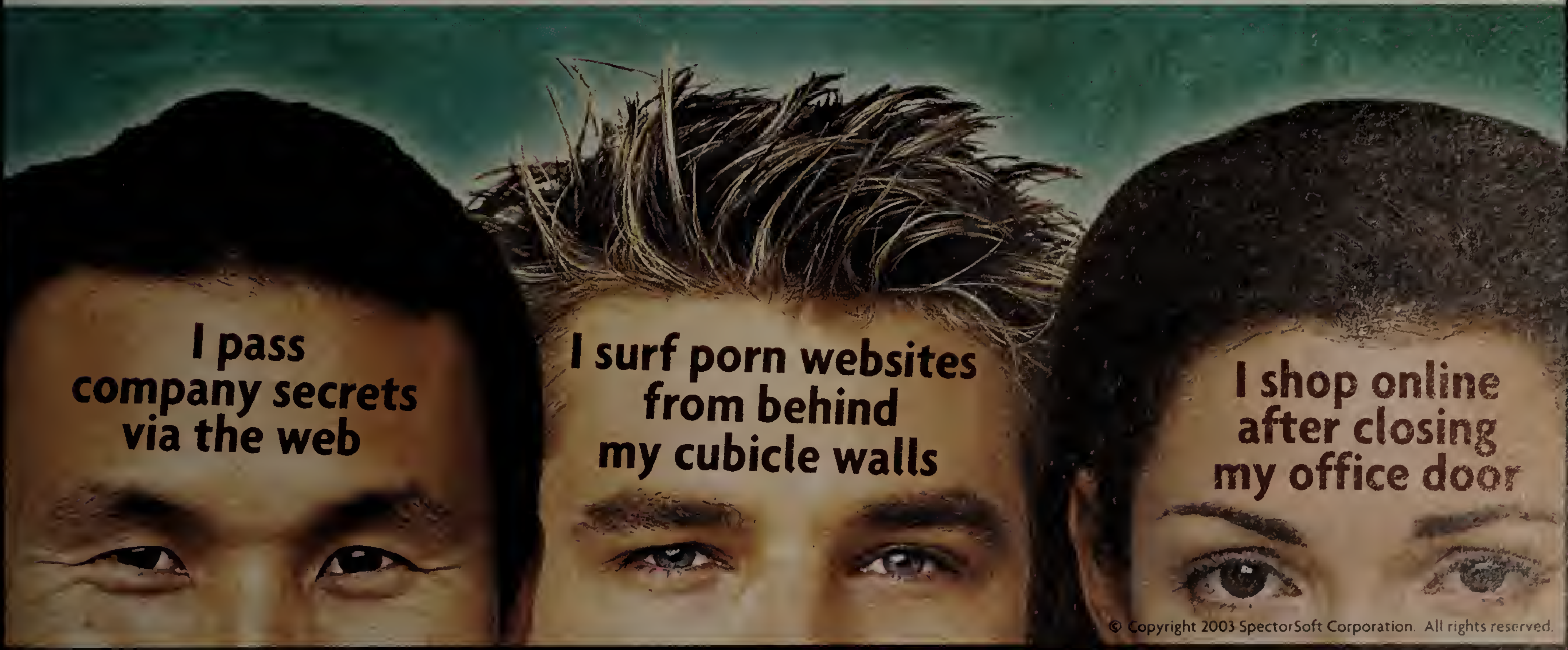
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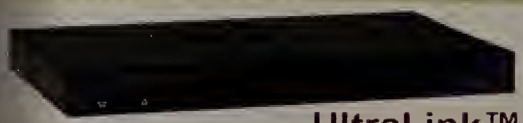

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- Easy to install, give it an IP address and run the remote client, no licensing required
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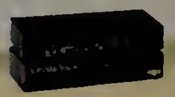
- Quad screen mode allows you to see four servers from one screen
- SSL security and passwords prevents unauthorized access

CrystalView™ Pro
DIGITAL KVM EXTENDER OVER FIBER OR CAT 5

- Extends KVM signals up to 33,000 feet away
- Uses only two fibers or single Cat 5
- Supports DVI/VGA, PC, Sun, USB, optional Audio/Serial
- Single or dual (dual supports second KVM station)
- Up to 1600x1200 resolution

CrystalView™ Mini
CAT5 KVM EXTENDER

- Extends KVM station up to 150 feet away
- optional serial/audio
- Single or dual (dual supports second KVM station)
- Up to 1280x1024 resolution



CrystalView™
CAT5 KVM EXTENDER

- Extends your KVM station up to 1000' from your computer
- Supports PC, Sun, or USB, optional Audio/Serial
- Single or dual (dual supports second KVM station)
- Up to 1600 x1200 resolution
- Available as standalone, rack mounted, or high density chassis

CrystalView™ Rack
CAT5 KVM EXTENDER

- Extends the distance from 6 or 12 PC's up to 1000 feet away
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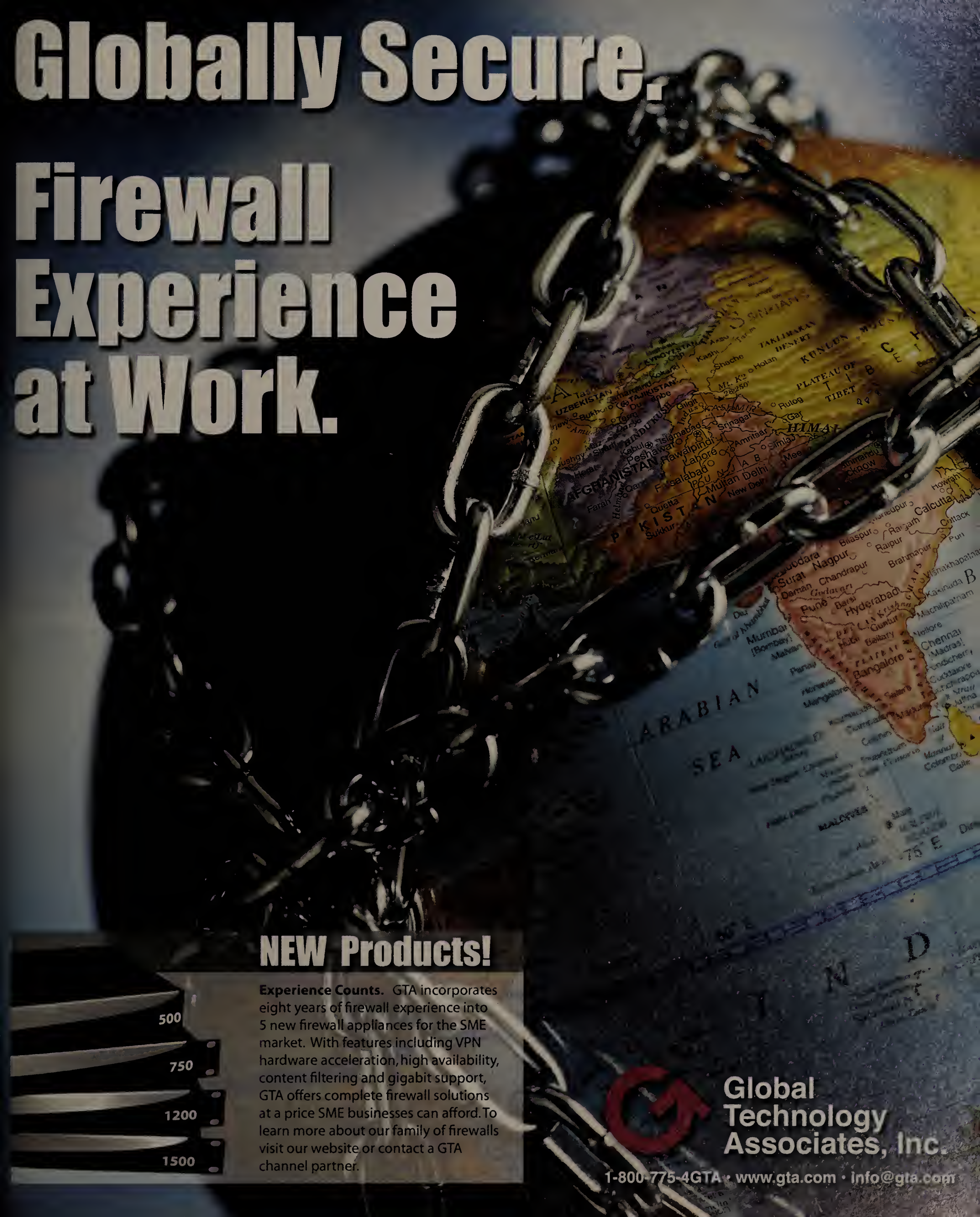

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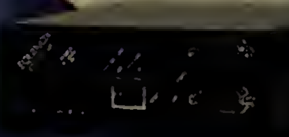

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Kaveman 16 - ***Allows up to 6 simultaneous users connecting 16 servers***

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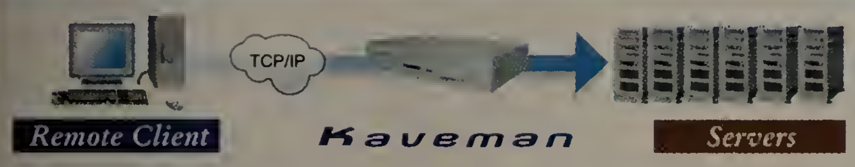
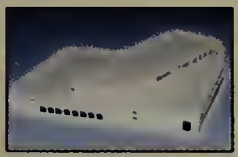


Available in 1, 8 and 16 channel versions

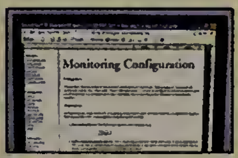
Remote Keyboard, Video and Mouse Access via Web Browser
You can access to the BIOS level of your servers or serial devices anytime, anywhere with full KVM control via a Web Browser or VNC.

24/7 Automatic Server Monitoring
Kaveman monitors server functions and notifies you before any server problems become critical.

Highly Secure Deployment
Kaveman utilizes 128-bit SSL encryption for all keyboard and mouse data and supports SSH and VPN environments. In addition, Kaveman offers specialized security features including the Turtle mode and Stealth mode.



Non-Intrusive To Your Network Environment
As a stand alone device that requires no additional software or hardware to install, Kaveman minimizes the potential impact on your servers.



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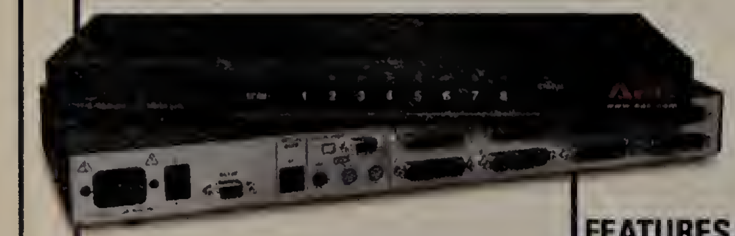

APC KVM Switches give you full control of up to 8 servers with just one keyboard, monitor, and mouse

APC KVM Switches eliminate the need for a keyboard, monitor, and mouse dedicated to each server. Thus, APC KVM switches can reduce your hardware and energy costs while saving valuable rack space.

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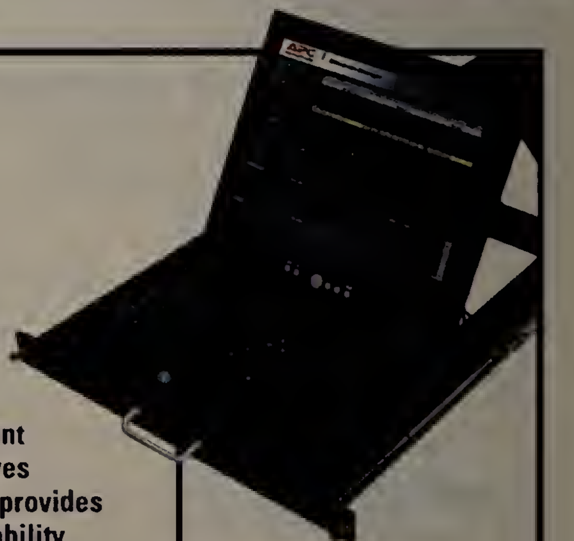

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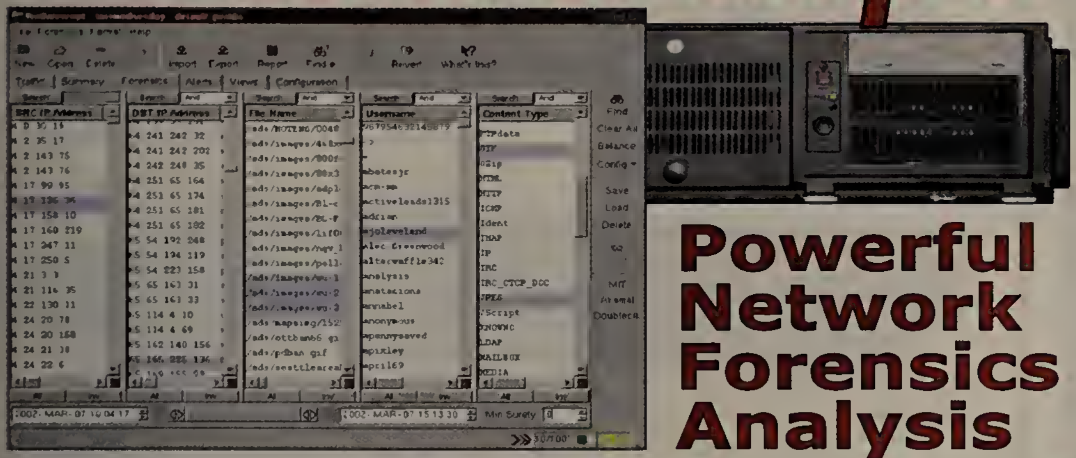

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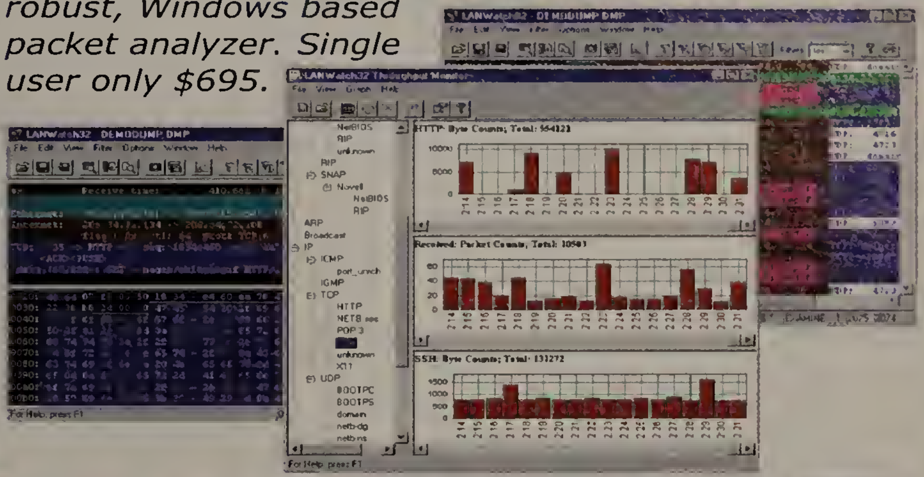

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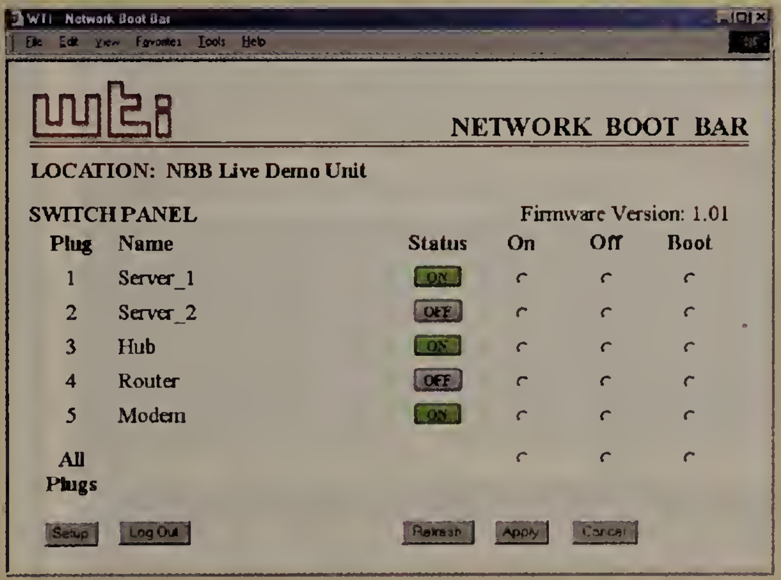

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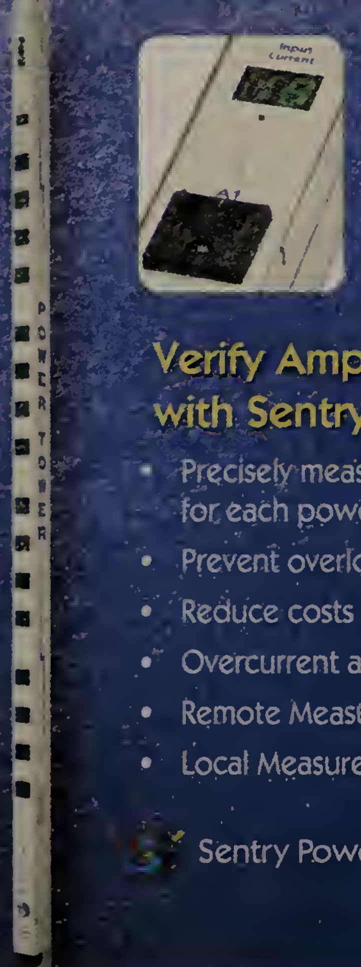

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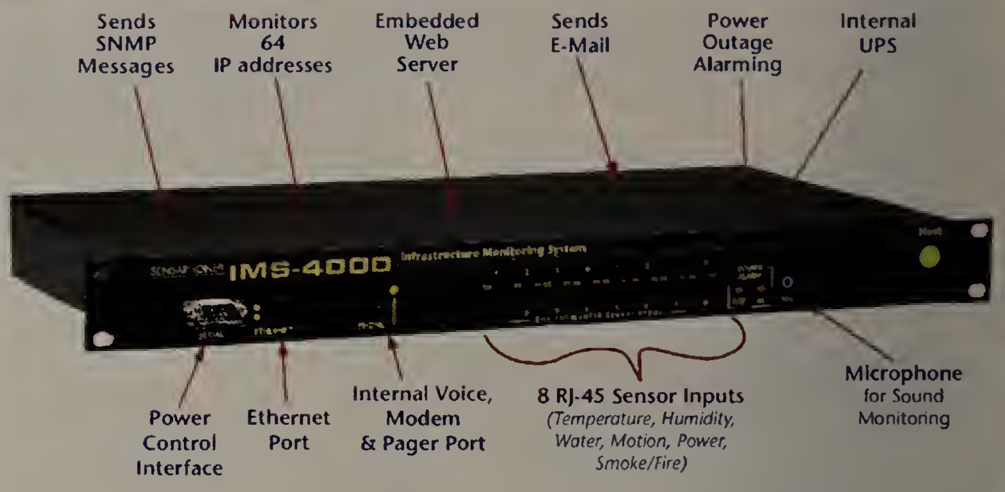

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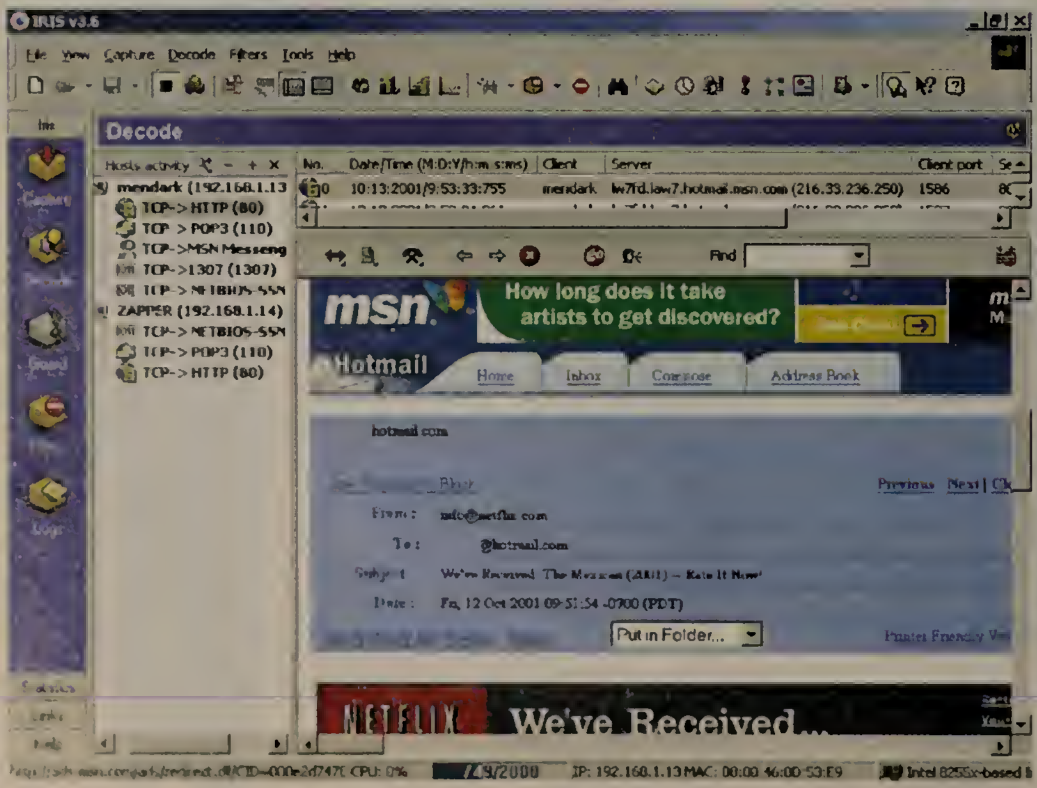
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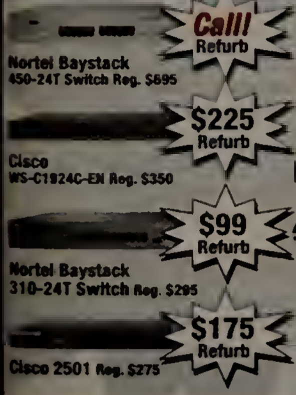

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GAVS Information Services seeks applications for a number of positions located in Denver or Louisville, Colorado. Applicants should send resumes to Prakash Vasant, GAVS Information Services, 4155 E. Jewell Avenue, Suite 603, Denver, CO 80222.

Please specify the job order number for the position(s) that you are applying for. All positions involve full-life cycle software development for software applications that incorporate client/server technology, are web-based, and/or involve data warehousing applications and data reporting tools.

Project Manager:
Requirements include Master's Degree in Computer Science, Engineering, or related field, including Computer Applications; software development experience; working knowledge of ACTA and Informatica Power Center Tools, SAP, Oracle DBA studio. (Job Order No. 001).

Team Lead
Requirements include Bachelor's Degree in Computer Science, Engineering, or related field, including Computer Applications; software development experience; working knowledge of Dispatch 1 ERP software applications, Oracle, PCVS Dimension Version Controller. (Job Order No. 002).

Software Application Developer:
Requirements include Bachelor's Degree in Computer Science, Engineering, or related field, including Computer Applications; software development experience; working knowledge of PL/SQL, Infomaker, Unix Shell Scripting, Oracle Enterprise Management, and Data Modeling. (Job Order No. 003).

Software Application Developer:
Requirements include Bachelor's Degree in Computer Science, Engineering, or related field; software development experience; working knowledge of Oracle, ACTAWorks, SAP Basis Administration, BMC Patrolling Software. (Job Order No. 004).

Software Application Developer:
Requirements include Bachelor's Degree in Computer Science, Engineering, or related field, including Computer Engineering; software development experience; working knowledge of J2EE, SQL/Server, Visual Basic, and Automated Testing. (Job Order No. 005).

Software Application Developer:
Requirements include Bachelor's Degree in Computer Science, Engineering, or related field including Computer Applications; software development experience; working knowledge of Unix Shell Scripting, Oracle, TOAD, Oracle Enterprise Server Manager. (Job Order No. 006).

Software Application Developer:
Requirements include software development experience; working knowledge of ASP, Oracle, FoxPro, Java. (Job Order No. 007).

Senior Software Application Developer:
Requirements include Bachelor's Degree in Computer Science, Engineering, or related field, including Computer Applications; software development experience; working knowledge of Dispatch-1 ERP Application, Data Warehousing, PVCS Dimensions, Oracle Relational Database Management Systems. (Job Order No. 008).

Software Application Developer:
Requirements include Bachelor's Degree in Computer Science, Engineering, or related field, including Production Engineering; software development experience; working knowledge of Oracle and SQL/Server RDMBS, J2EE Web server, JDBC Database Adapter. (Job Order No. 009)

Telecomm co. in Framingham, MA seeks Senior Technical Services (Support) Engineer to: provide remote and on-site technical training/engineering support, isolate/resolve customer software and systems installation problems; assist customers to debug complex telephony applications/systems; provide engineering consultations; and interface with customers on compatibility of solutions. Must have: BS in Elect. Eng., Comp. Sci., Engineering, or equiv; 4 yrs customer support engineering experience, including hands-on, real-time technical customer service and experience with complex software issues at embedded technology level. Salary $96,115.50/yr. Submit 2 resumes to Case #200202665 Labor Exchange Office, 19 Staniford Street, 1st fl., Boston, MA 02114.

Chief computer programmer needed to maintain and refine a business simulation software system that is used for business training in marketing, manufacturing, accounting and finance. Requires BS or foreign equivalent in Computer Science or related field and 2 years in related job or 2 years in Computer Programming. Experience must include 2 years designing, implementing, testing, developing and maintaining medium scale software systems; designing and programming SQL databases; application development using Delphi programming environment and development of business simulations; and 1 year in web design using HTML, Macromedia Dreamweaver, Photoshop and Macromedia Fireworks. Send resumes to Ernest R. Cadotte, c/o ILS, 500 Summit Hill, Knoxville, TN 37901.

Tobin International seeks applicants for Sr. DBA Developer in Denver, CO to design, install, maintain, and administer Oracle relational database management systems for GIS applications Requirements for position include bachelor's or foreign equivalent in computer science, computer engineering or related field experience as an Oracle DBA Developer and working knowledge of GIS applications. Respond by resume to Mary Kimball Tobin International, 1625 Broadway, Suite 500, Denver CO 80202

Software Engineer, TX and at various client sites in US: Perform analysis, design, development, deployment & implementation of web based applications with JAVA/J2EE architecture, provide E-commerce solutions. Use JAVA, EJB, JSP, SERVLETS, XML, XSLT, JAXP, LDAP, Java Script & DHTML. Develop client side & Intranet applications Req: Bachelors in Computer Science or related + 2 yrs in job or 2 yrs as Programmer Analyst for web-based applications. Mail resume to HR, DBR Consultants, 5700 Glenview Ln., The Colony, TX 75056

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Software Engineer - Boston, MA: Software developmt for STP (Straight - Through-Processing) global securities trade processing/mgmt solutions, & Meta Info. Modeling in relational format using UML & Gang-of-4 Design Patterns. Use C/C++, Java (J2EE, servlets, EJB, Java Native Interface), OOD/OOA, UNIX shell scripts, RMI, XSLT, & VBScript to code features in Oracle, Weblogic Server, MS & Weblogic Enterprise environments to account for trade cycles, trade settlemt models, & finan'l svcs industry infrastructures. Use PL/SQL, UML, Rational Rose & TogetherJ to develop/ implement DB code generators/search structures. Use Oasys Global API to develop/enhance interfaces between CTM & Oasys Global systems. Ensure system integration/delivery for ALERT CTM systems. Provide technical leadership to small teams; & oversee life cycle of core product features cradle-to-grave: design, implementation, unit testing, documentation, bug fixing Design/implement trade message validation systems in ISO15022 & MT511 formats. Minimum Reqmts: Master's degree or foreign equiv. in Computer Sci., Computer Applic'ns or MIS + 3 yrs of exp. in job offered or in jobs meeting following reqmts: 3 yrs of software developmt experience in Java; & 1 year in: STP trade mgmt applic'ns; TogetherJ & Gang-of-4 Design Pttns for Meta Info. Modeling; Oasys Global API; ALERT CTM applic'n; & ISO15022 & MT511 message formats. Exp. may be gained concurrently. Hours: M-F, 9 am-5 pm. Rate of Pay: $95,586/yr. Pls submit 2 copies of resume to: Case # 200202882, Labor Exchange Office, 19 Staniford St, 1st Fl, Boston, MA 02114

Software Engineer/Lead person sought by Mfg. & Installer of Shade Structures located in Dallas, TX. Function as the lead for two other software engineers. Min requirements - Bach degree or equiv. in Comp. Science or Physics and Math + 5 yrs. exp. Send resume to: G. Subel, Sun Ports Int'l, Inc., 8319 Chancellor Row, Dallas, TX 75247.

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Computers - Programmer Analysts needed. Seeking qual. candidates possessing BS or equiv. and/or relevant work exp. Part of the req. relevant work exp. must include 2 yrs. working with iPlanet, Oracle, Unix Kernel Tuning & System administration. Mail resume & ref. to: Object Solutions, Inc., Attn: HR, 3025 Harbor Lane, #312, Plymouth, MN 55447-5119.

Systems Analyst: Design software programs for company in the area of accounting; Creates & maintains company database; Designs & maintains the Internet & e-business strategy & the website of the company; Works w/Macromedia flash & Photoshop; Works w/ASP & cold fusion; Works w/SQL server 7.0-BS in Computer Information Systems & 2 yrs of exp.,40-per wk, 9-6PM, Fax resume to: Alexander Motors Int. Corp. Attn: David Adrian Soae (000) 000-0000

Software Engineers (multiple positions) sought by computer s/w development firm in Jacksonville, FL. Must have Bach in Comp Sci., Engg or equiv and two yr relevant exp using NLP algorithms, VC++, InstallShield, VB 6.0, ASP, XML, SQL Server 2000, and Win32 API. Respond to: HR Dept., Intelligenxia, Inc., 4905 Belfort Rd., Ste 110, Jacksonville, FL 32256.

Aztek Engineering, Inc. seeks Sr. Systems Engineer to work in Boulder, CO to engage in full life cycle development in telecom systems. Requires bachelor's in electrical engineering; 4 years experience in full life cycle development of systems requirements and hardware architecture for Class 4 and Class 5 central office systems platform and in ASIC and FPGA design using HDL languages; and working knowledge in voice over packet (VOP) gateway design and IP and ATM system design using C/C++ programming languages. Respond by resume to Debra Chernak, Aztek Engineering, Inc., 2477 55th St., Suite 202, Boulder, CO 80301 and refer to job #0782.

Software Engineers to design, develop, test wireless/web software systems & services for devices including WAP Phone, Pocket PC's, etc. using Java, JSP, VB, VBA, SQL, Web Servers, Weblogic, HTML, Ms Access and WCTP under Windows, UNIX OS; perform req analysis to determine tech. feasibility; study/evaluate new tech./methodologies; provide guidance for complex user problems. Require: M.S. or foreign equiv. in CS/Engg. (any branch). Competitive salary. F/T. Respond to: HR, Air2Web, Inc., 1230 Peachtree Street NE, Promenade II, 12th Fl., Atlanta, GA 30309.a

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Advansoft (Soft O Soft) is looking for program or system analysts, IT engineers. Candidate must have BS or equivalent. Exp. in IT area such as Oracle, Java, VB, WebSphere/Weblogic etc Is plus. Travel maybe required for some position. Send resumes to:
info@advansoft.com. EOE

Picabyte Consulting is looking for programmer/system analysts, software/project engineers. Req. BS/MS with 1-year experience in the IT field. Strong skills in JDEdwards world , Oneworld, Oracle, VB, SQL preferred. Send resumes to 1500 S. 6th St. Ste. B, Springfield, IL 62703. EOE.

Seeking qualified applicants for the following positions in Memphis/ Collierville, TN: Senior Systems Programmer. Devise procedures to solve complex systems and applications problems. Requirements: Bachelor's degree or equivalent* in computer science, MIS, engineering, mathematics or related field plus 5 years of experience in systems programming. Experience with retail point-of-sale systems/ applications development using Java; CORBA; and systems/integration/user acceptance testing also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

PROGRAMMER ANALYSTS for Hickory Hills, IL office. Design & Develop software applications using Oracle, XML, UML, C++, Sybase, Interwoven, Coolgen, ClearCase, ClearQuest, PVCS, UNIX. Bachelors req'd in Computers, Engineering, Math or related field of study +2 yrs of related exp. 40 hrs/wk Must have legal authority to work permanently in the U.S. Send resume to HR Manager, Compro Consulting Group, Inc., 8619 W 95th St., Hickory Hills, IL 60457

Database Administrator: Install and test database and application configuration; establish and maintain test and production databases; assure database security; install all system customization; perform all necessary database tuning; perform regular database audits to check data integrity, perform and test backup and recovery procedures, provide application development support to developers. Req. BS or equivalent in CS or CIS + nine months experience in job offered or as Tech. Support Engineer. Must be Oracle and Microsoft certified. Must be proficient in Advance C/S, Advance Web Access, PowerBuilder/InfoMaker, Crystal Reports, ASP, and Java Script. 40 hr/wk, 8am-5pm. Contact Herbert J. Brunswick, Georgia Tech Foundation Inc., 760 Spring Street, NW, Suite 400, Atlanta, GA 30332-0182

SYSTEMS ANALYST to provide on-site consulting in analysis, design, development and implementation of business to business and enterprise integrations of applications in manufacturing, distribution and retail industries, on AS/400 with WebMethods B2B server, EDI to support enterprise applications such as Shop Floor tracking system (MESA), ASP, .Net Technology, VBScript, Java, JavaScript, RPG, COBOL and webMethods integration tools. Require: Bachelor in Computer or Electrical Engineering with two years experience in the job offered. 40% travel to client sites within the United States required. Competitive salary and benefits, 40 hours/week, 8 am to 5 pm, M-F. Mail resume to: Vice President, Frontline Consulting Services, Inc., 8701 Mallard Creek Road, Charlotte, NC 28262.

Sr. Programmer/Analyst to design, develop, implement & maintain computer systems including database architecture, databases, e-commerce applications & web pages, intranet, internet & network infrastructure; creation of project plans, schedules, & estimates; preparation of system documentation & transformation processes to support CPH Mall and other systems utilizing XML, XSL, JavaScript, data modeling, TBC publishing system & CPH Mall database, Microsoft Commerce Server 2000 and DBMS (RMS, SQL Server and Oracle). Requires BS in Computer Science, Engineering, MIS, SSM or related field plus 2 yrs experience as Programmer/Analyst. Send resumes to D. Fiedler, Human Resources, Lutheran Church-Missouri Synod, 1333 S. Kirkwood Rd., St. Louis, MO 63122.

COMPUTER / PROGRAMMER ANALYST (Manh.). Study and evaluate existing systems and define appropriate systems; analyze system flows and program specifications; evaluates user requests for new or modified programs; writes manuals for users to describe installation and operating procedures; train users. Environment: Novell-Netware, MS-DOS, Delphi, Cognos Impromptu, Visual Basic, Oracle, and Powerplay. 2 yrs exp., 40 hrs/wk, 9AM - 5PM, $87,235/yr. B.S. Computer Science. Send resume in duplicate to: BA#2714, P.O. Box 703, New York, NY 10014-0703.

Software Engineer sought by fund company in Denver, CO to work in Denver & other unanticipated job sites in the US to design, develop & implement software applications which run on mainframe,Windows NT, AS400, & Unix operating systems. Implement the software applications which run on open systems & integrate them with legacy systems using software languages & tools including Oracle, Java, JBuilder, Unix, TSO/ISPF, JCL, COBOL, AS400, SQL Loader & Autosys. Develop interfaces between open & legacy systems & database management systems, & manage the migration of data between the systems. Design & develop customizations, maintenance and/or enhancements to the existing software applications. Debug the applications & engage in problem solving & business process re-engineering. Provide user training & support. Use Java programming language & proprietary case tools. Requires Master's or equivalent-specifically, a Master's or foreign equivalent in computer science, or a related field (including electronic engineering); OR a Bachelor's or foreign equivalent in computer science,or a related field (including electronic engineering), plus five years of progressive experience; working knowledge of open & legacy applications including Oracle, Java, Unix, & AS400. 8am-5pm, M-F; $75,000/year. Respond by resume to Employment Programs, PO Box 46547, Denver, CO 80202 refer to CO5056821

Programmer Analyst: Responsible for Analysis and Design of database (ORACLE 7.3/8.0/8i). Development and Maintenance of Oracle Forms and Reports, Graphics, (Forms 4.5/5.0/6.0 and Reports 6.0/5.0,2.5). Develop Stored Procedures (PL/SQL 8.0/3.0). Develop Shell Scripts, AWK, Kornshell, UNIX and PERL. Bachelors Degree in Computer Science or relevant field with 4 Years of work experience in related occupation. 49 Hrs./Week., $68,000/annum. Must be willing to relocate to various unanticipated work locations throughout the USA every 4 to 10 months, employer paid. Must have proof of legal authority to work in the United States. Send your resumes to the Iowa Workforce Center, 215 Watson Powell Jr. Way, #100, Des Moines, Iowa 50309-1727. Please refer to Job Order IA1101785. Employer paid advertisement.

Tier1 Innovation seeks applicants for the position of Senior Consultant in Denver, CO to design, develop and configure Siebel applications to meet customer requirements, especially in the pharmaceutical, clinical trials, energy and financial industries. Requirements for this position include a bachelor's degree in business or computer science and 3 yr exp. as a software engineer implementing Siebel packages and in data conversion/migration and integration experience in various Siebel vertical/horizontal packages. Requirements also include working knowledge of Siebel eClinical, ePharma, eEnergy, Sales Force Automation and Call Center packages, as well as Informatica 6.x/5.x, Siebel 7.x, Siebel EAI, Microsoft SQL Server, Oracle 8.x and Unix. Applicants must have Siebel 7 certification Respond by resume to Jill Colbeck, Tier1 Innovation, 4600 S. Ulster St., Ste. 700, Denver, CO 80237.

Principal Software Engineer will make enhancements to existing applications and initiate & architect new development projects; participate in client server application design and development; apply knowledge of the full product development life cycle, from requirements definition through architecture, coding, and release to develop & maintain Windows & Web-based applications related to Co's portfolio & performance systems technology architecture. Will review portfolio management requirements & design and code based upon developed specs; solve technical problems & alert technical lead of issues/obstacles; work directly w/business users to specify functional and technical requirements; and also work w/junior Software Engineers, Database Administrators, Systems Administrators; Users & Management to manage/control design, development, testing and software implementation related to portfolio & performance systems.

Will provide estimates of work and participate in project planning; perform internal scripting to develop dynamic code in secure web applications. Requires Bachelor's or equivalent in C.Sc., Engineering, Math, or Physics plus 5 years in job offered OR 5 years exper in Sybase database development. Candidate must also possess demonstrated expertise writing UNIX shell scripts and stored procedures in SQL; demonstrated expertise programming database loaders and extract jobs using Autosys & demonstrated expertise managing Sybase replication functions, Sal: $90,500/yr, M-F, 9A-5P. Send 2 resumes to Case #200202853, Labor Exchange Office, 19 Staniford St., 1st fl., Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept full-time U.S. employment in U.S.

SOFTWARE ENGINEERS (12 positions): require Bachelor's or equivalent in Engineering/Computer Science/Mathematics/ Science or closely related field with two years experience providing skills in described duties, at $79,000 per year. Provide on-site consulting in design, analysis and development of software applications for legacy systems in IBM mainframe environment; development and administration in Oracle, DB2, SQL Server and Sybase; e-commerce and web applications development in Microsoft, Java and related technologies; network management systems development with Netscape Server and related tools; SAP R/3 applications on Windows with DOS and ABAP/4 and related modules. 40% travel to client sites in the United States. Mail resumes to: YASH Technologies, Inc., 605 17th Avenue, Suite 1, East Moline, IL 61244.

Computer Supp. N'work Enng: Design, install & support multi-vendor network services and components. Requires: 2 yrs. exp. in job off'd or 2 yrs exp. as a Tech Analyst or related with same duties & B.S. in Comp. Sci., Elect Engg or related or 3 yrs exp in job off'd or 3 yrs exp as a Tech Analyst or related with same duties & 2 yrs college ed in Comp. Sci., Elect Enng or related. Exp. ref. required. Send resume to: Vertex Soft, Inc., 622 Georges Road, Ste 104, N. Brunswick, NJ 08902.

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Infomerica is looking for system/programmer analysts, software/project engineers & computer consultants working at different sites (travel required). Candidates must have BS with exp. in IT fields. Skills of Oracle, Informix, Java preferred. Send resumes to info@infomericainc.com

K&M Softech is looking for programmer/system system, software/project engineers or IT professionals. Both entry & experienced levels needed. Some positions require travel. Skills in C++, VB, Oracle, SAP, SQL are plus. Please send resumes to Recruit@kmsoftech.com. EOE

Senior Field Service Engineer - Install and accept all of the company's test systems at customer sites. Install tester software and connect to customer network. Keep records of the test system up-time and customer part usage. Perform telephone troubleshooting with the customer. Schedule preventive maintenance quarterly to achieve optimum system performance. Monitor performance on all of the company's test equipment. Schedule engineering change orders implementation to modify equipment design. Travel to customer sites and liaison with customer's engineering staff to resolve difficult technical problems. Help to develop and optimize test program for best test results. Requirements include a Bachelor's degree or equivalent in Electrical Engineering or related field and two years of experience in the job offered or related field of supporting semiconductor capital equipment. Requires approximately 50% domestic travel. Applicants must have unrestricted authorization to work in the United States. Salary $82,202/year. 40 hours/wk. Respond with two copies of resume to Case #200202719, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114

Engineer, IT Tech. Development: Web related & server-side R&D, w/ Object Oriented Design. JAVA app. development; implement Contents Mgmt Syst.; use BEA Weblogic, Apache Web server etc. for campaign mgmt, personalization of company websites, transfer of svc to Web-based. Create enterprise connections & data-sync between web servers in US & Korea w/ JMS. B.S. in Computer or related eng'ring. + 2+ years J2EE Technology implementation, BEA Weblogic & core server-side programming in JAVA. Send resume to Robert Ang, Korean Air, 1813 Wilshire Blvd., Los Angeles, CA 90057.

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Telecomm co. in Framingham, MA seeks Senior Technical Services (Support) Engineer to: provide remote/on-site technical training/engineering support; isolate/resolve customer software and systems installation problems; assist customers to debug complex telephony applications/systems; and provide engineering consultations. Must have: BS in Elec. Eng., Comp. Sci., Engineering, or equiv; 4 yrs communication systems development exp. using C; and knowledge of 2 of the following: SS7, ISDN, wireless technology, IP Telephony & Switching, Fax and CTI. Salary $92,833/yr. Submit 2 resumes to Case #200202668 Labor Exchange Office, 19 Staniford Street, 1st fl., Boston, MA 02114.

Software Developer

Design & develop copy protection & data protection software. B.S. in CS, or rel. w/abil. to use C, Assembler, C++, TCP/IP, PKI technologies, copy protection technologies, authentication & cryptographic algorithms & technologies. 40.0 hr/wk. 9-5. Send resume to: Ms. Rosemarie Marx, Pres., Marx Software Security, 2900 Chamblee Tucker Road, NE, Bldg. 9, Ste. 100, Atlanta, GA 30341

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BackSpin Mark Gibbs

For the people and by the people

I just watched the first and apparently last gubernatorial debate that will feature Ahhhrnold in the three-ring circus that is the California recall election. It was terrific. I couldn't make up stuff like that.

If you don't know the actors — umm, candidates — involved in this event there was Lieutenant Governor of California, Cruz Bustamante (Democrat), who came across as irritatingly smug and not a little smarmy; Arianna Huffington (Independent), who is very smart but too shrill and too much of a political animal for her motives to be trustworthy; Peter Camejo (Green Party), who is really smart but far too socialist for my tastes; Republican state Sen. Tom McClintock, who is mostly well-informed and seems credible; and last but not least, Arnold "The Govenator" Schwarzenegger (Republican).

Arnold actually came across much better than I had expected, although he skirted a few issues. On the other hand it wasn't as if any of the other candidates seemed to be committed to staying on topic either.

Arnold also took Huffington's repeated jibes in stride and displayed a facility with off-the-cuff sound bites that was impressive.

What has this to do with networking? Well, as I sat there being entertained, glass of wine in hand, it occurred to me that the Internet might render politicians a dying breed ... at least as far as we think of them carrying out their duties today.

You might think politicians already are disposable (indeed, many appear to be purchasable as well), but the truth is that they are the current mechanism of the system — we elect our representatives on the basis that they conform to some extent to our values and then we turn them loose to make decisions on our behalf. And when they don't, we have a recall.

When we were a young country and communications were slow, this hierarchical management system made sense — you couldn't get a true consensus because the idea of holding a plebiscite back in say, the 1800s, would have been totally impractical. As a digression let me note that, as an example of how slow communications were for even world-shattering news, I have read it took three weeks for the story of Lincoln's assassination to reach England.

But now we are a slightly older country with great communications and we are approaching the era of Internet voting. Sure, many pundits have pointed out that there are significant security problems in running elections over the 'Net, but they can and will be solved. And I can't believe that Internet voting systems could be any less dubious than, say, Florida's was in the last presidential election.

Eventually the proposition of any citizen being able to vote online from anywhere will become a reality, and then the chad will hit the fan. Voters turning rabidly activist as happened with the California recall will become commonplace, and eventually the demand for more issues to be voted on by the people and not through the dubious proxy of their elected representative will become overwhelming.

No politician will be able to dam the flood of voter demand for the people to be consulted and for them to make decisions through voting. This will apply to all sorts of social and political issues ranging from the most strategic to the most tactical.

And that will throw politicians into a completely different role as information brokers rather than balancers of often conflicting political agendas. The pressure to be honest and objective would be immense because they would have to adopt the role of mediator and enabler rather than decision maker.

Does that all sound too optimistic and utopian? Perhaps, but government for the people and by the people would take on a whole new meaning.

Your vote to backspin at gibbs.com.

'NetBuzz News, insights, opinions and oddities

By Paul McNamara

Put . . . the . . . phone . . . down

There's no need to call Judge Edward Nottingham in Denver to vent your outrage over his ruling last week granting telemarketers a reprieve from the federal government's wildly popular do-not-call list. (Although, if someone has his honor's home phone number, it might be fun to yank his chain, oh, say during dinnertime.)

There's no need to call your Washington lawmakers, either, even though phones in congressional offices were no doubt ringing non-stop during all of last week's legislative and legal maneuvering. Congress is speaking with one voice on this issue, and for once it's the same as yours.

And complaining to the Direct Marketing Association, which has helped carry the telemarketing industry's leaky bucket into sympathetic courtrooms, isn't worth the wear and tear on your dialing digit.

The reason you don't need to run up your long-distance bill — or your blood pressure — is that this, too, shall pass, although probably not before scotching Wednesday's scheduled implementation of the do-not-call regulations. We're talking about a mere hiccup here, a minor detour.

Why the confidence?

Well, it isn't every day that the Senate votes 95-0 and the House weighs in at 412-8 in support of legislation that didn't even exist when lawmakers awoke that morning. But that's what happened last Wednesday after an earlier court decision held that the Federal Trade Commission (FTC) lacked proper congressional authority to initiate the do-not-call list.

"Here's your stinkin' authority," lawmakers fairly sneered.

As for Judge Nottingham, he simply and obviously erred. In essence, he argued that The FTC is proscribed by the First Amendment from curtailing the activities of commercial telemarketers, while at the same time leaving political and religious telemarketers free to dial at will.

But there's nothing novel about government drawing such distinctions, as political and religious speech have historically — and with good reason — enjoyed a greater degree of First Amendment protection than does commercial speech.

That's why you can stick a sign in your front lawn touting your favorite political candidate but can't erect a commercial billboard there. It's why religious pamphleteers have an easier time in airports and malls than do hawkers for merchants.

In short, the law is chock full of cases — long-established and widely accepted — in which the government treats commercial speech differently than it does political and religious speech.

Nottingham's decision hasn't got a prayer of surviving appeal.

What e-mail ban?

Speaking of this, too, passing: Much ado was made last week about the purported banishment of e-mail from the premises of British company Phones 4U.

Turns out there was much less to the story than you might have gleaned from press snippets. The headlines and broadcast versions made it seem as though the company's CEO had simply up and scrapped e-mail altogether. . . . Not so.

Not only did the so-called "ban" cover only internal employee-to-employee e-mail, it failed to account for the fact that the company in question conducts a slew of internal processes via e-mail that weren't likely to be conducted any other way any time soon.

None of which stopped e-mail vendors from jumping on the story. One offered me a briefing "to discuss how companies can avoid having to take such drastic measures like getting rid of e-mail completely."

Buzz will save you the time of such a consultation. If you are contemplating the drastic step of getting rid of e-mail completely, here's all you need know:

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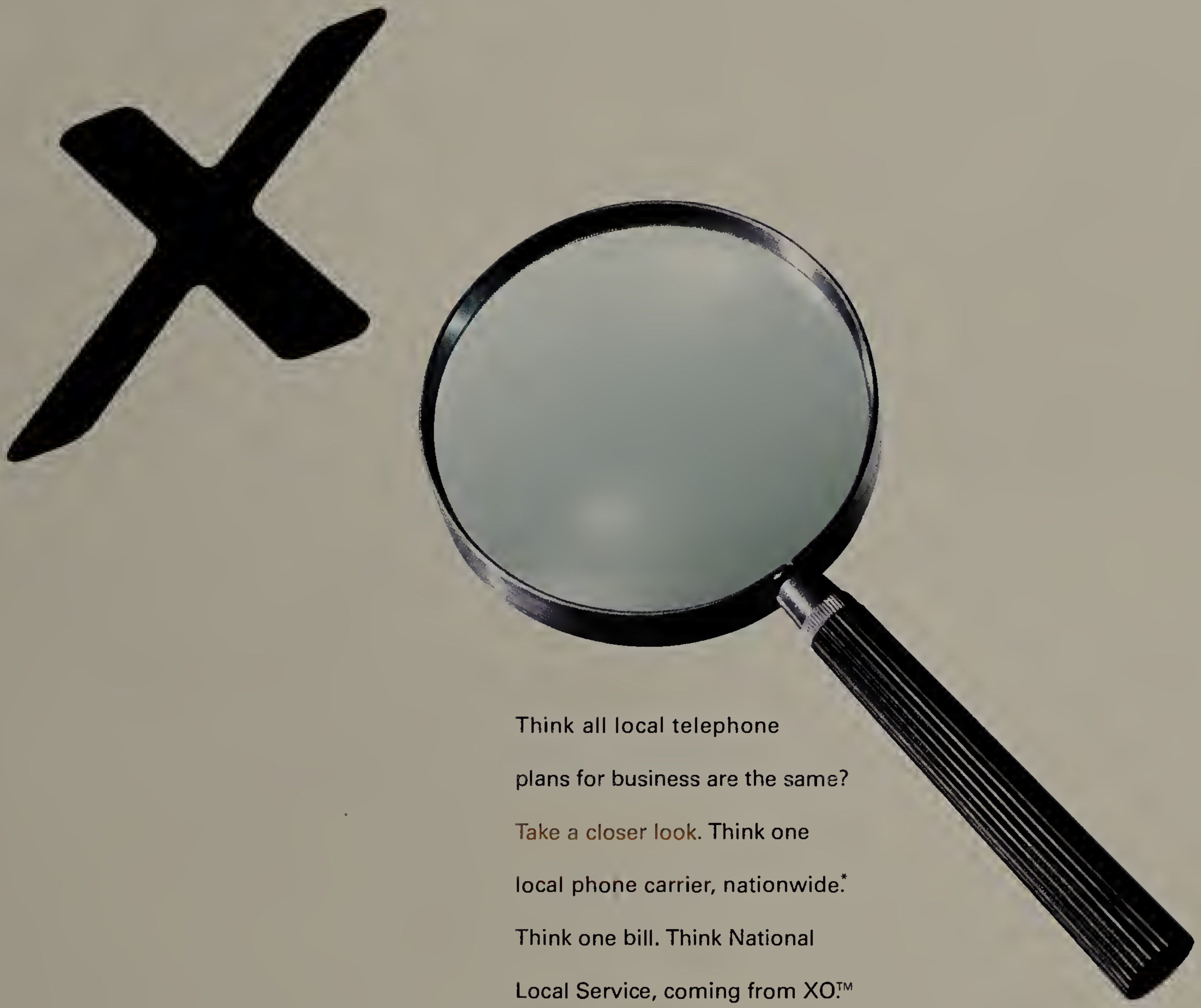

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